euluce

Lighting INDUSTRIAL

lightenjin

lightenjin

Industrial activity is one of the major contributions for national economy.
Every business improvement – whether by a human, social, or equipment factor – results either directly or indirectly from an increase in productivity.

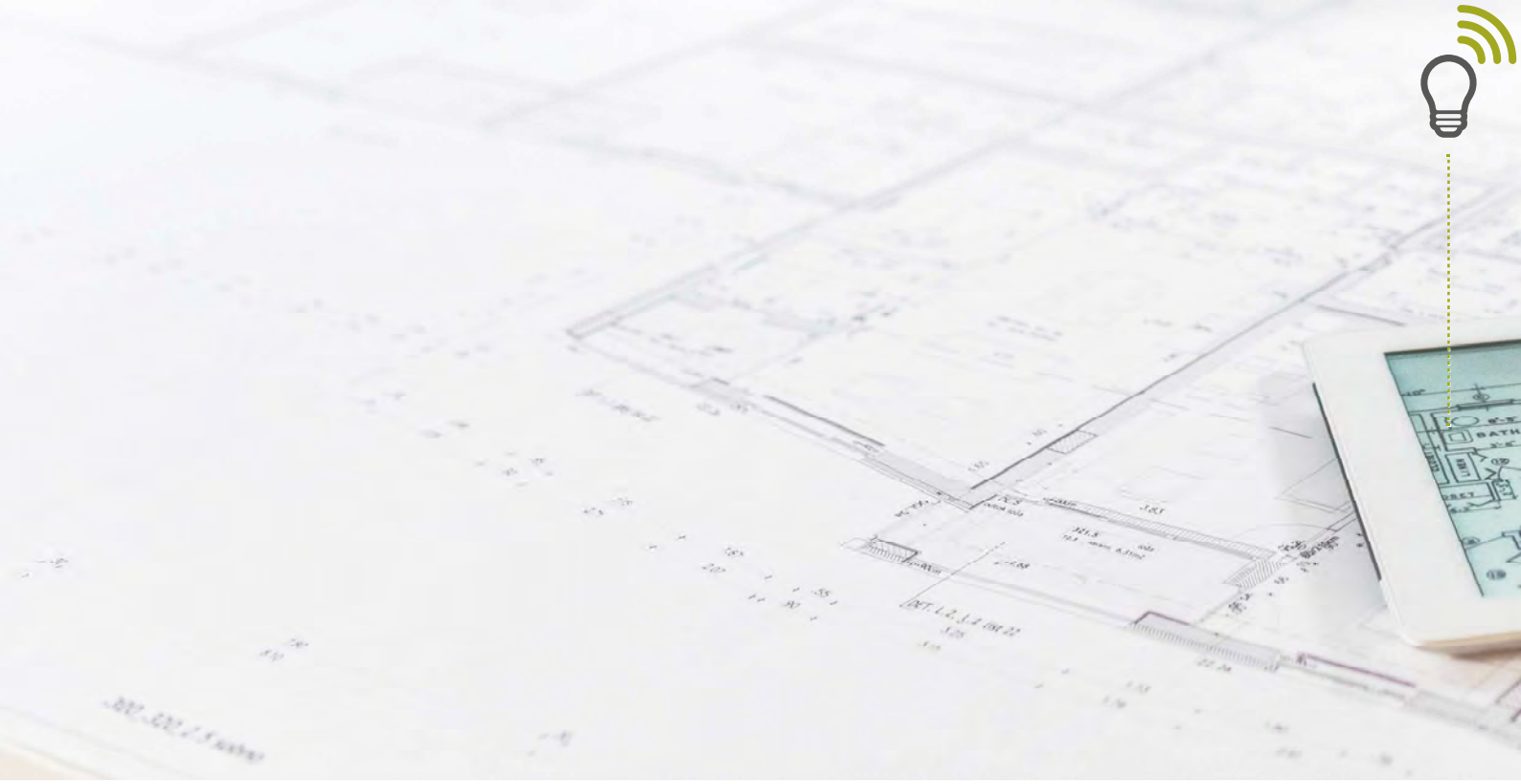
Lighting industry **Lightenjin** focuses on studying natural and artificial lighting systems working towards the continuous achievement of dynamic and technologically advanced solutions that become direct added values for users and managers.

An adequate quantity and quality of light has an immediate impact on the quality of visual conditions, but also unconsciously on each individual's biological functions, which are controlled by lighting.

Costs associated with a high number of hours of use should also be considered in addition to the quality of used lights. With LED technology, you can reduce energy consumption by over 70% and the light used also lasts longer (50.000 hours) leading to a significant decrease in maintenance costs.

Industrial working environment is extremely demanding, being subjected to dust, humidity, heat, vibrations, and other specificities. Light fixtures used under these conditions must be robust as to comply with the regulations for the protection of sources of light under adverse conditions.

A **simple solution** for complex tasks



MONITOR, ANALYSE, DECIDE

The correct management of internal resources as well as monitoring performance requires us to resort to the latest technologies.

The relation between adequate lighting for working purposes and a decrease in energy consumption is seen as a determinant factor for the productivity and competitiveness of corporations and industries. However, managers do not usually hold all the necessary information for making proactive and informed decisions on using the energy in their buildings.

Remote energy monitoring is an efficient and tested solution for reducing energy consumption and detecting anomalies, as well as implementing good using practices. Lightenjin has provided Global Energy Meter – **GEM** for monitoring energy.

HOW IT WORKS

GEM is a solution for monitoring and managing electrical energy consumption in single-phase and three-phase circuits.

Monitoring information and reports are provided through a dedicated web page, which may be accessed using a 3G/4G and/or Ethernet connection.

Information collected by the GEM may be directly looked up without the need to subscribe to any subscription or monthly services.

You can build reports using data export tools allowing for an analysis of the global consumption of your installation and providing the information needed for the optimisation and verification of energy efficacy measures and negotiation of energy supply contracts.

Consumption Analysis

Industrial Pavilion

After monitoring and later analysis, a decision must inevitably be made.

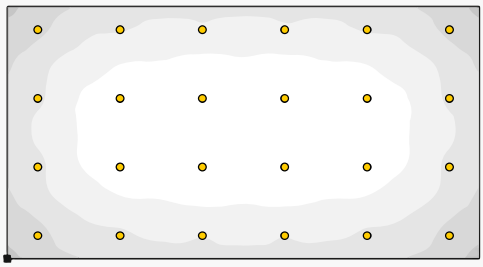
There are many factors in industry, which are subjected to a more efficient management, and lighting is one of them.

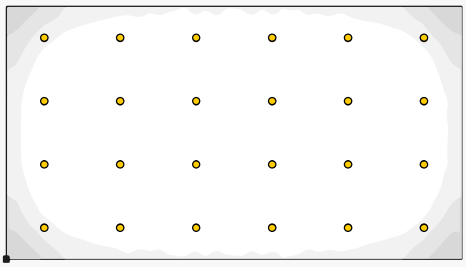
It is important to carry out a comparative test of the existing installation and new solutions in order to support the decision-making process.

As an example of an industrial installation, an exercise was created, which shows an existing installation, its replacement using existing points of light, and a new solution for a new installation resulting from a lighting project created from scratch without any constraints due to the points of light. The three projects presented represent a 10 m high pavilion and suspended lights at 9.5 m in an industrial complex.

example of an Industrial Pavilion

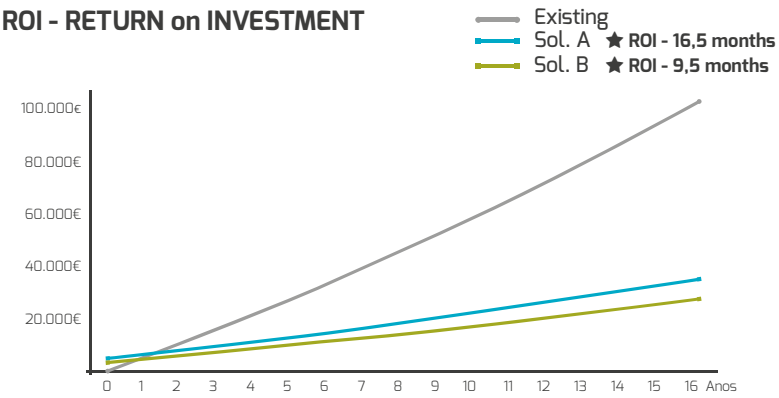
dimensions: 45x25m / 1.125m^2
height: 10m
Light fixtures height: 9.5m

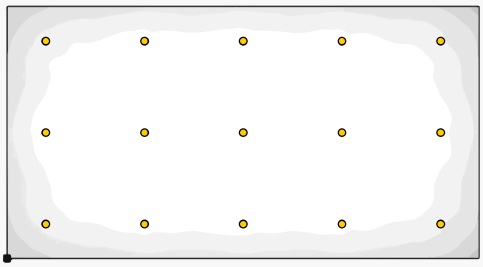




	EXISTING INSTALLATION	**LED - SOLUTION A** using existing points of light in the existing installation
Light Fixtures	Mercury Vapour 400W	GYRUS MI HE 159W
Number of Lights	24	24
Lamp Wattage	400 W	159 W
Absorbed Power of the Equipment	520 W	159 W
System Efficacy	55 lm/W	142 lm/W
Luminous Flux / Light Fixtures	22.000 lm	22.708 lm
Work Plan Luminance	300 lux	385 lux
Energy Consumption	29.203 Kwh/year	8.929 Kwh/year
Emissions	1,4952 Ton CO_2/ KWh year	0,4572 Ton CO_2/ KWh year

ROI - RETURN on INVESTMENT





Time of Return on Investment
9,5 months

Energy Savings
76 %

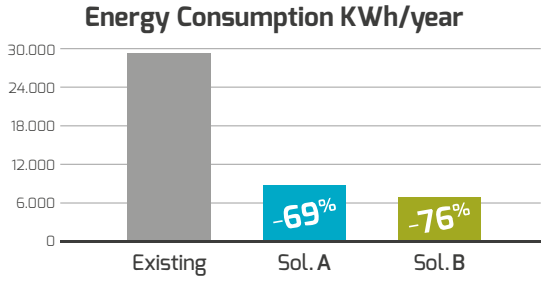
CO_2 Emission Reductions
76 %

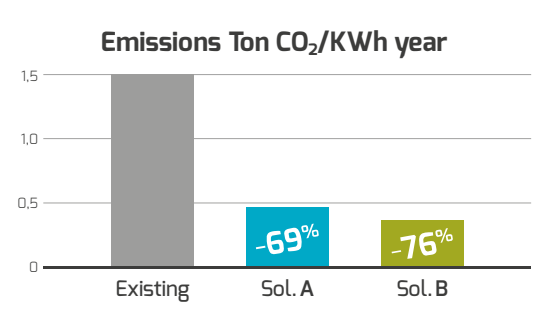
LED - SOLUTION B

lighting project with a new distribution of the points of light

GYRUS MI HO 202W
15
202 W
202 W
140 lm/W
28.281 lm
328Lux
7.090 Kwh/year
0,3630 Ton CO_2/ KWh year

ANNUAL SAVINGS





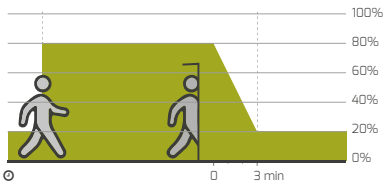
LIGHT CONTROL SYSTEMS

Lightenjin lights with LED technology generate energy saving, since they comply with the requirements for high lighting efficacy with low energy consumption.

Our engineering department provides a set of customised solutions for the functionalities sought by our clients for their installations.

Light fixtures together with additional mechanisms allow for more dynamic usage and substantially decrease consumption. Light control systems are electronic devices that enable us to add one or more tasks to a light fixture or set of light fixtures.

All light control systems are parameterised and interconnected by installing *software*.



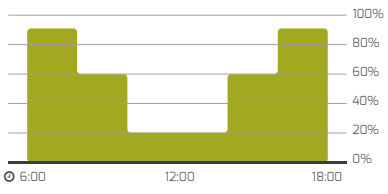
Flux Regulation

The user adjusts luminous intensity by means of a push button. For this decreased illumination to correspond to a reduction in light consumption, the light fixtures must come with specific electronic equipment.

Corridor FUNCTION

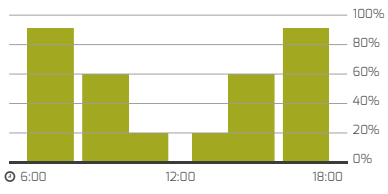
The system parameters are set to a constant level of lighting. Intensity is activated through the presence of people. In the absence of people passing by, lights shall be dimmed to previously set values.

Average savings of **50%**



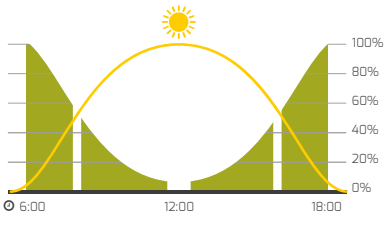
Timer

Lights are adjusted to a previously set time. In addition to the ON/OFF option, the parameters of luminous intensity may also be set using a timer.



Motion Sensor

The motion sensor activates lights when people are in the complex.



Daylight

Illumination based on the natural light + people presence equation associated to the ON/OFF option adjusted using a timer.

Different industries, Different requirements

Food Industry

Food industry illumination is subjected to strict guidelines regarding the product's design and quality:

- The product's design should prevent some parts from eventually falling off or detaching themselves from the light fixtures (high IK);
- The hygiene guidelines stipulate that accumulated dust should be easily removed;
- The light fixtures should have a high IP as to be apt for humid, hot, and cold areas;
- Materials used should be resistant to chemical agents used in cleaning;
- Lighting levels should be suitable for inspection on each manufacturing stage.

Chemical Industry / Pharmaceutical Industry

A laboratory is a delimited and isolated geographical area where the number of particles or germs in the air is as low as possible. The aim is to keep unwanted influences away from people and production.

As well as being very important to ensure an excellent lighting level in order to achieve a correct visual analysis, light fixtures should also comply with the following requirements:

- High chemical resistance, particularly against cleaning and disinfectants;
- Water resistant and dust proof (≥IP65);
- Very low or null particle emissions;
- Flat surface preventing the accumulation of particles and germs;
- Biologically resistant materials.

Auto Industry

Lighting conditions are pretty specific in the auto industry. The following should be ensured among many others:

- Additional lighting directed to the work station as well as general lighting;
- Light fixtures should be lateral to the assembly line;
- Glare control;
- Dark and light reflection areas should be eliminated as to prevent mistakes from taking place at work as well as employee fatigue;
- Minimise light reflections;
- Specific lights for quality control with either a high amount of light (≥ 1000 lux) or separated by colour.

Explosion Hazard Area

There are potentially explosive areas in the industry.

The ATEX directive classifies the risk of an explosion in certain spaces as well as electrical equipment to be used according to the risk of an explosion in that area.

Flammable gas and vapour areas have been divided into three:

ZONE 0 (> hazardous); ZONE 1; ZONE 2 (< hazardous);

Combustible dust and fibre areas have also been divided into three: ZONE 20 (< hazardous); ZONE 21; ZONE 22 (> hazardous);

This classification results from a crossed combination of both classifications.

Industries such as petrochemical, food, sugar refinery, milling, pharmaceutical, fertiliser, textile, wood processing, paper and cellulose, among others, are likely to generate gas, vapour, combustible dust and fibre areas.

There are many risks of explosions and lighting equipment must be classified as to suit each hazardous area.

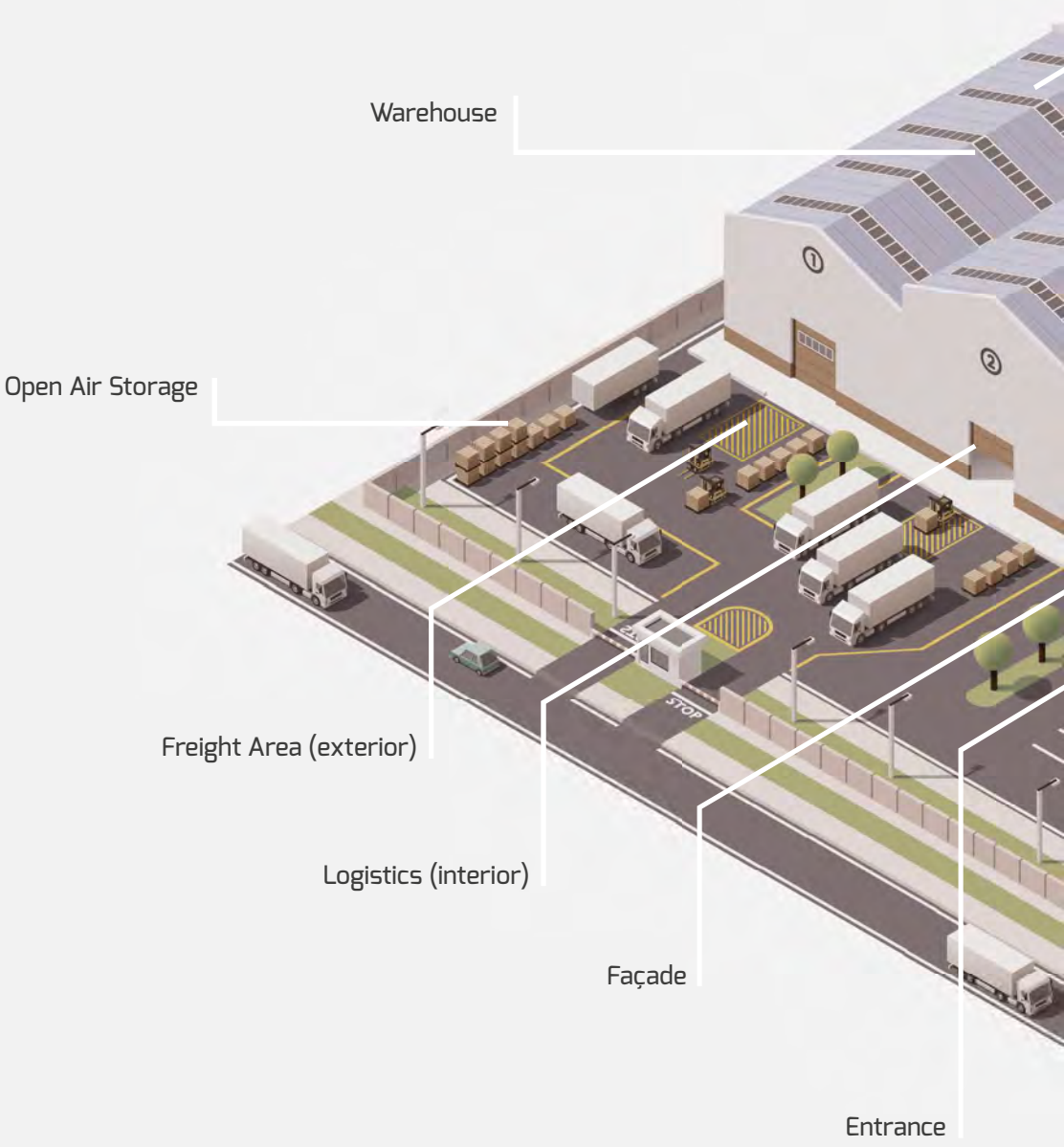
The right solution for each application

The development of Lightenjin lights complies with a strict group of assumptions to be fulfilled.

The denominator that crosses all projects of the product's design is the equipment's **economy**, whether by means of consumption (W) or maintenance.

Environmental sustainability is present when choosing materials and recycling them at the end of their useful life, as well as the permanent concern for reducing CO_2 emissions.

The **quality and efficacy** of LED technology seeks to obtain a high colour rendering index **(Ra)>80** and lens variety for more optimised applications. The systems operate well in high/ low temperatures along with light fixtures with low thermal emissions.



The **robust** LED technology is based on solid components. The system becomes more reliable in relation to the lights that use glass tubes and filaments.

Constantly seeking **control**. Whether control by means of a flux of light, through lenses, or control through variations in terms of brightness.

In addition to this set of criteria, each project has its own specificities taking into consideration the tasks set to achieve, place of applications, and technical specificities for each industry.

Lightenjin products indicate the colour temperature with which the standard product is provided. However, light fixtures may be provided with a colour temperature by request from a client, which may vary between **2700 K** and **6500 K**. The useful life for LED lights is **50.000 hours** (L80 B10).

Production & **Logistics** (interior)

GYRUS

Light fixtures in injected aluminium with **IP65** and **IK08**. With two perspectives and a luminous flux interval of **(7329-29180) lm** rendering it applicable in several types of lighting projects. With a system efficacy up to **148 lm/ W** operational costs are significantly reduced, hence allowing for a fast return of investment.

MULTIS

Light fixtures with a body in steel suited to very high industrial complexes. With **IP54**, it is versatile and cost-effective with a long useful life with little maintenance. The MULTIS range has a luminous flux of **(12369-37461) lm** and system efficacy up to **126 lm/ W**.

CITHARA XL

Light fixtures to be applied inside/ outside with **IP65** and **IK09**. Its swinging arm allows for it to be applied to the wall and to control the light beam. The luminous flux interval of **(6845-14590) lm** and system efficacy up to **144 lm/ W** render its performance at a competitive cost.

STAGNUM LED II

Light fixtures with **IP66** and **IK08**. The luminous flux interval of **(6754-12417) lm** renders it applicable in several types of lighting projects. With a system efficacy up to **129 lm/ W** operational costs are significantly reduced, hence allowing for a fast return of investment.

Assembly Line

ECO LINNE W

Steel plate light fixtures for making up beam lines. The luminous flux varies between **(8062-10077) lm** enabling it to be applied on a project as far as 6 m high. Economic product with high luminous efficiency up to **133 lm/W** and **Ra>80**

ECO LINNE V

Economic steel plate light fixtures with **Ra>80**. Its luminous flux varies between **(5290-8325) lm**, with system efficacy up to **137 lm/ W**. This equipment is suitable for assembly lines where the ceiling is as far as 3 m high.

LINNE W

Light fixtures in aluminium to be applied in electrified rail systems. Its luminous flux varies between **(5957-8039) lm** with lighting efficiency of **125 lm/ W** and **Ra >80**. Equipment suitable for applications up to 6m high.

DRILED

Light fixtures in aluminium. Small-sized product indicated for illuminating workstations. Its luminous flux varies between **(1248-11781) lm** with system efficiency up to **179 lm/ W**. This equipment is suitable for applications up to 6 m high

Explosion Hazard Area (ATEX)

ATTEX

Light fixtures for illuminating explosion hazard areas (ATEX). The **IP66** ensures leak tightness and the protection of electrical components so that the electrical equipment does not ignite in an atmosphere surrounded by potentially explosive elements. The **IK07** renders it robust and a luminous flux of **(820-3610) lm** ensures good lighting.

Laboratory

ASEPTIC

Economic galvanised steel plate light fixtures. Product with **IP65** indicated for applications in sanitised environments. Its luminous flux varies between **(3420-5625) lm** with lighting efficiency of de **100 lm/ W**.

Warehouse

ECO LINNE W

ECO LINNE W (DA) is a light fixture with a light beam with **dual asymmetry** developed to be applied in large halls as high as 6 m. It enables beam lines with a luminous flux that varies between **(8062-10077) lm**. This is an economic product with high luminous efficiency up to **133 lm/W** with **Ra >80**.

LINNE W

LINNE W (M) is a light fixture with an **intensive beam** made out of aluminium to be applied in electrified rail systems up to 3 m high. **LINNE W (S)** is a solution with an **intensive beam** to be applied up to 6 m high. Both versions are intended for narrow halls. Its luminous flux varies between **(5957-8039) lm** cwith lighting efficiency up to **125 lm/W** and **Ra >80**.

ECO LINNE V

ECO LINNE V (O) is a light fixture with an **elliptical beam** to be applied up to 8 m high. The elliptic curve enables lighting through the halls without the need for a solid line. Its luminous flux varies between **(5290-8325) lm**, with system efficacy up to **137 lm/ W** and **Ra >80**.

Freight Area (Exterior)

GYRUS

The GYRUS light fixtures have a high protection rating of **IP65** and **IK08** and are also indicated for applications in covered freight areas in the exterior. Its luminous flux of **(7329-29180) lm** and energy efficiency up to **148 lm/ W** significantly decrease operational costs, hence allowing for a fast return of investment.

STAGNUM LED II

These light fixtures with **IP66** and **IK08** are suitable for covered exteriors. The luminous flux interval of **(6754-12417) lm** renders it applicable in several types of lighting projects. With energy efficiency up to **129 lm/ W** operational costs are significantly reduced, hence allowing for a fast return of investment.

CITHARA L

Light fixtures to be applied outside with **IP65** and **IK09**. Its swinging arm allows for it to be applied to the wall and to control the light beam. The luminous flux interval of **(3884-5082) lm** and energy efficiency up to **109 lm/ W** render its performance at a competitive price.

Open Air Storage

NOXIS M

Light fixtures for exterior lighting at great heights with **IP66** and **IK09**. The luminous interval of **(14658-23437) lm**, enables us to safely handle freight at night in the exterior. The lm interval, energy efficiency up to **148 lm/ W**, and the possibility to attach it to a pole or column render NOXIS into a very versatile light fixture.

CITHARA XXL

Light fixtures for exterior lighting at great heights to be applied on a pole, column, or wall. **IP65**, **IK09**, and the luminous interval of **(21987 -29180) lm**, enable us to safely handle freight at night in the exterior. Energy efficiency up to **148 lm/ W** renders its performance at a competitive price.

Shower Facilities

STAGNUM PRO LED

In addition to being suitable for applications in covered exteriors, **IP66** and **IK08** render these light fixtures as equipment indicated for areas with a lot of steam, such as shower facilities. Its luminous flux of **(4676-7915) lm** and energy efficiency up to **128 lm/ W** significantly decrease operational costs, hence allowing for a fast return of investment.

TULED 50

IP67 and **IK09** render these exterior light fixtures indicated for shower facilities, where there is a lot of steam. Its luminous flux of **(1845-7642) lm** and energy efficiency up to **154 lm/ W** significantly decrease operational costs, hence allowing for a fast return of investment.

Entrance &
Circulation Areas and Stairs

QUADRATUM

The QUADRATUM family with an aluminium body was designed in order to be the differentiating element in space. The combination of different sized equipment as well as the possibility for suspension, surface mounting, or recessed mounting enable us to customise an area. The flux interval of **(9211-20015) lm** enables it to be used in high ceilings.

ELEMENTARE Q 170

Recessed downlight with a square rim and possibly white, grey, black, or stainless steel finishes. The luminous flux of **(1344-1912) lm** is suitable for entrances and circulation areas.

ELEMENTARE R 90

Recessed downlight with an aluminium rim lacquered to colour. The equipment may be provided with a transparent or frosty diffuser, or without a diffuser. With a luminous flux of **(1510-2671) lm** it enables us to create great uniformity in lighting.

TAUPA

TAUPA is an uplight designed by Architect Adalberto Dias to be incorporated into noble spaces.

The soft and elegant shapes are complemented by an opal diffuser ensuring a constant and clean light distribution. With a luminous flux of **(1031-4475) lm** it accommodates design and energy efficiency.

FLAT

The FLAT uplight was designed by Architect Adalberto Dias. Small-sized equipment with luminous flux of **(1350-1710) lm**. Its adjustable wall mounting enables either direct or indirect lighting. In addition to being applied in interior environments, its **IP65** allows for exterior usage.

Meeting Room

LINNE E PW45

The LINNE E PW45 light fixtures are recessed mounting. It is equipped with a highly pure aluminium reflector. The flux interval of **[1419-6149] lm** confers versatility for several types of application.

LINNE

LINNE is a linear equipment that is simple to assemble and modular enabling us to create different configurations and lengths. It is available in different lengths for the purpose of recessed mounting, surface mounting, or suspension. The flux interval of **[1677-14534] lm** confers project versatility.

Office

OPUS E ECO (UGR <16)

Light fixtures especially designed for an office environment. Equipped with an anti-glare micro prismatic diffuser (**UGR <16**) indicated for working with screens in accordance with standard EN 12464-1. Flux interval of **(3836-11081) lm**.

OPUS E PW45

Light fixtures designed for general illumination in service and office buildings. Its geometry, fixing system, and flux interval of **(2839-10248) lm** enable its recessed mounting in modular ceilings. The different diffusers or aluminium reflector ensure high versatility and suitability to the different project requirements.

Lavatories

ORBIS R 100

The small-sized Orbis R 100 downlight with an adjustable shaft of light is ideal for creating intimate environments without compromising its efficacy and lighting power. Equipment with **IP44**.

SHEER Q 80 GU10 O

Small-sized downlight indicated for small spaces with an adjustable shaft of light. Equipment with **IP44**.

Social Area and Canteen

OPUS S O

The OPUS S O light fixtures are an option with **IP40** suitable for dining halls, which serve as a neutral element in space albeit with top quality lighting.

ALTUS Q 130

The ALTUS Q 130 light fixtures are either suspended or mounted on the surface and enable us to associate a diffuser in order to use them in dining halls. This apparatus allows for a differential environment inside a general one.

Façade

REDUCTA 175

REDUCTA 175 with **IP67** and **IK10** is equipment designed for exterior lighting with recessed mounting on the floor and suited to driving areas. Its high lighting power of **(2180-3074) lm** ensures that objects are illuminated and walls are swept at low operational costs, hence rendering this product very competitive.

TULED 20

TULED 20 is a minimalist family of products. Developed for highly symbolic and architectural spaces with luminous flux of **(1066-4925) lm** allowing for different ranges in terms of façade. Its exterior mounting is ensured through the construction and use of materials conferring **IP68** and **IK09**.

CITHARA XL

With **IP65** and **IK09** these light fixtures are not just indicated for exterior illumination at great heights, but its swinging arm allows for the light beam to be controlled in order to illuminate the façade. The luminous flux of **(6845-14590) lm** and energy efficiency up to **144 lm/ W** render its performance at a competitive price.

External Paths

REDUCTA 30

REDUCTA 30 with **IP67** and **IK06** is a versatile point of light, which may be incorporated in a recessed manner into pavements, ceilings, and walls either inside or outside. This product is ideal for small beams of light, signs, and sweeping walls.

PALUS

Equipment available in two sizes, which was designed for the purpose of exterior illumination, such as sidewalks and parks. Its design, which projects light closer to the ground, allows for good lighting at a low cost together with a flux interval of **(427-726) lm**.

PHARUS

Lighting fixtures with a 360º amplitude light and high visual comfort due to the incorporation of an anti-glare gutter, which directs the light emitted to the ground. This product has a wood lacquered aluminium stem, contributing for better suitability in the space where it is incorporated.

Car Parks

NOXIS S

Aluminium light fixtures for exterior lighting at great heights with **IP66** and **IK09**. With luminous interval of **(7329-9727) lm** and energy efficiency up to **138 lm/ W** and the possibility to attach to a pole or a column. Light fixtures suited to car parks for LGV and HGV vehicles.

LLAMP

LLAMP is the ideal point of light for those seeking an autonomous and efficient lighting solution. Its pole is equipped with 12 solar panels and two batteries that should last three days without the need to be connected to an electrical current. Its luminous interval is **(2282-7812) lm** with energy efficiency of **155 lm/ W.**

CRATUS MAXI

Pole and light integrated solution with a robust design (**IP67** and **IK10**) but refined forms. A hot galvanised steel plate construction and colour finish. Its luminous interval is **[2282-16897] lm** with energy efficiency of **146 lm/ W**. Light fixtures suited to car parks for LGV and HGV vehicles.

PRIMAVIR EVO

Organic and robust design (**IP67** and **IK10**). Aluminium construction with colour finish and diffuser in tempered glass. Its luminous interval is **[2282-15625] lm** with energy efficiency of **144 lm/ W**. Light fixtures suited to car parks for LGV and HGV vehicles.

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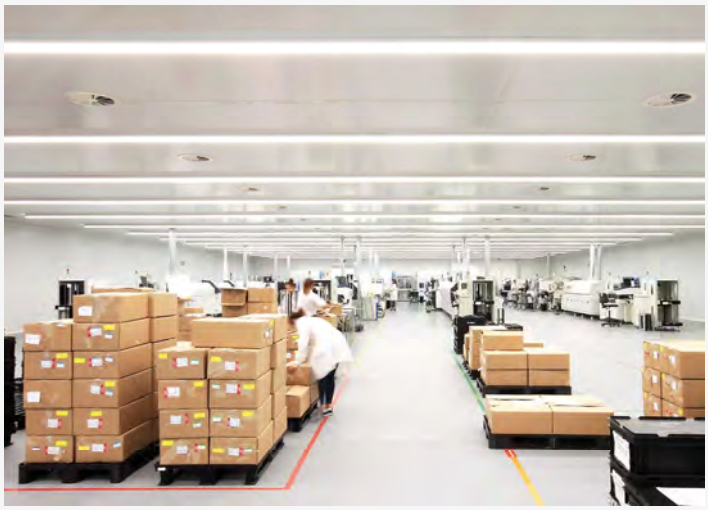
Lightenjin Projects



5 reasons to **switch to LED**

Economy

LED equipment usually has operational costs like no other in the lighting industry when compared to conventional technologies. This fact is due to its high useful life cycle, which is over 50 000h, and high energy efficiency.

With an increase in efficiency, energy dissipated into heat decreases representing less thermal load in the spaces, and subsequently in HVAC systems.

Environment

LED technology contributes remarkably to reducing environmental impact not just by reducing energy consumption and associated consequences in terms of CO2 emissions, but also by reducing the entire environmental impact associated with its production and recycling.

All materials used in light fixtures are recyclable and no toxic elements are used, such as mercury, unlike the fluorescent conventional technologies, hence contributing towards a higher environmental sustainability.

Quality and Efficacy

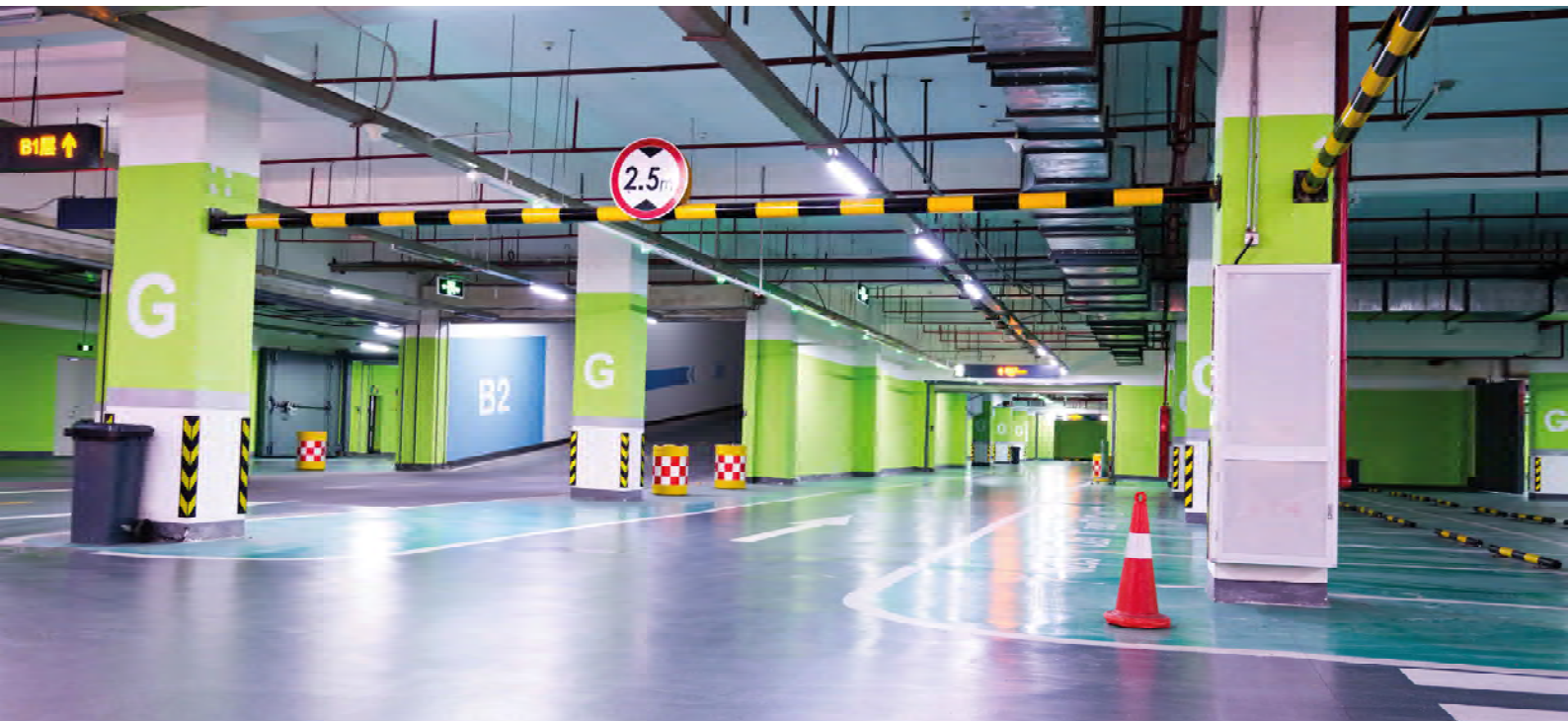
The quality and efficacy of LED technology can be translated into five important factors: the possibility to obtain a high colour rendering index (>90); the maximum wattage is immediately available; a great variety of lenses enabling us to direct light based on our space needs; the possibility to work under negative temperatures and low energy dissipated into heat.

Robustness

LED technology is based on solid components, hence rendering the entire system more robust when compared to conventional lighting, which is formed by glass tubes and filaments that are more likely to rupture or break. This characteristic makes LED much more reliable with subsequently less failures and malfunctions.

Control

LED is the ideal source of light for control systems rendering light control systems highly flexible. This technology enables the brightness of LED technology to instantly vary with a high resolution, where it may even increase its useful life when working with lower luminous fluxes.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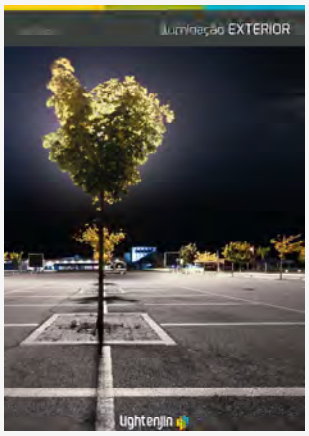
Lightenjin

Lightenjin manufactures professional lighting solutions to be applied in interiors and exteriors.

Lightenjin products combine technology, ergonomic design, lighting control, and energy efficiency always keeping in mind user well-being as the main goal.

If you do not find the technical solution you are looking for, please do not hesitate to contact our engineering department.



We are constantly updating our documentation. Whatever your business field, please read the related brochure, where you will find more detailed and specific information.

Documentation available on **www.lightenjin.pt/en/downloads**

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