

Smart [4]

LED SYSTEMS FOR
INDUSTRIAL LIGHTING
AND FLOODLIGHTING

GEWISS

A close-up photograph of green leaves with water droplets, serving as the background for the text.

Smart [4]

TRULY SUSTAINABLE LIGHTING



Intelligence is the ability to adapt to the environment, resorting to the best solutions in terms of effectiveness and efficiency, in any situation.

Smart [4] is the new lighting range by GEWISS that interprets intelligence exactly from this point of view and makes its **versatility and adaptability** the key aspect of its identity, offering **sustainable light** in the most varied of contexts and in which **lighting performance is a must**. **Smart [4]** can be a floodlight, high bay or ceiling light as needed, offering different photometries depending on the different contexts. The practicality of the new luminaires guarantees **optimal lighting performance in any application, from industrial to sports environments, indoor or outdoor**.

And that's not all. The horizontal and vertical modularity of the new product is combined with the ease of installation and maintenance, with the use of "green" materials and with the unmistakable style of Italian design.

Energy efficiency, light quality, an immediate return on investment, ease of use and speed of implementation: these are the characteristics that make **Smart [4]** a truly intelligent product.



Industrial lighting

04



Floodlighting

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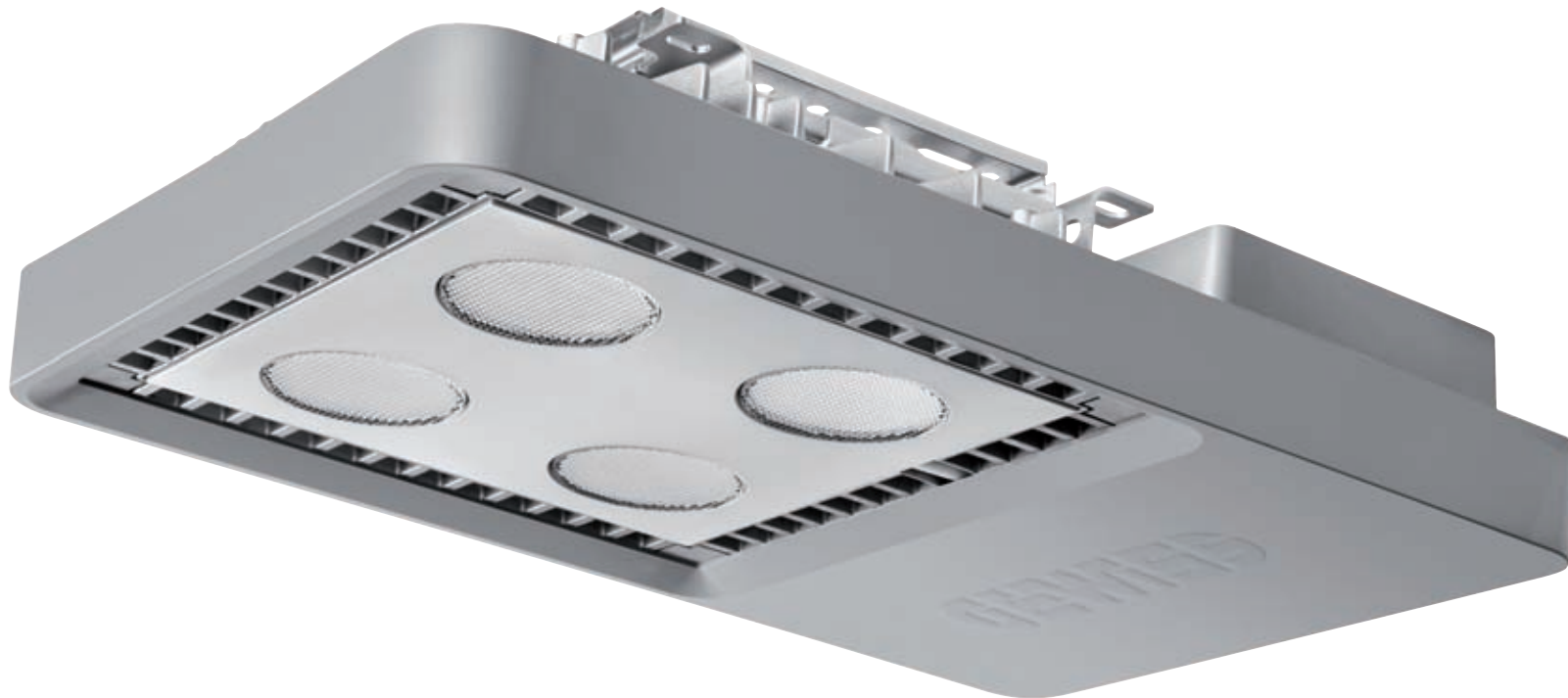


Smart [4] technology

26



Industrial lighting



Smart [4] LB|HB

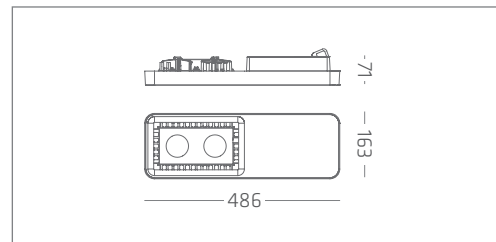
Luminaires for industrial environments, logistics centres and parking areas.

- Frame in technopolymer.
- Dissipator in die-cast aluminium with very low copper content

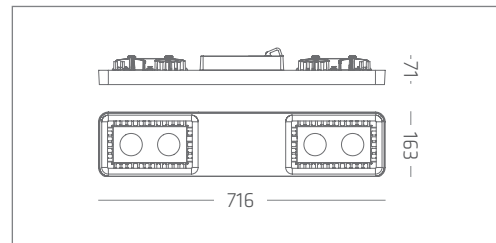
- Fixing plate in galvanized iron.
- Fixing spring in prestressed steel.
- IP 66
- IK 08 (Body)
- Glow wire 650°/850°

Low-bay luminaires

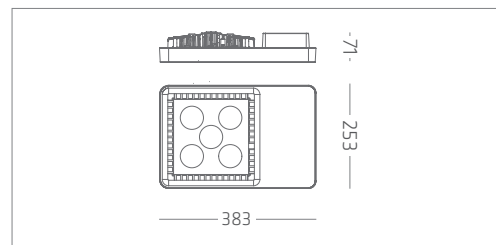
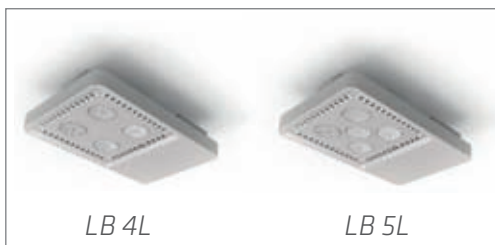
Smart [4] LB - 2L - 1,200mA DRIVING CURRENT - IP66 - IK08 (Body) - Glow Wire 650°/850°⁽¹⁾



Smart [4] LB - 2+2L - 1,200mA DRIVING CURRENT - IP66 - IK08 (Body) - Glow Wire 650°/850°⁽¹⁾



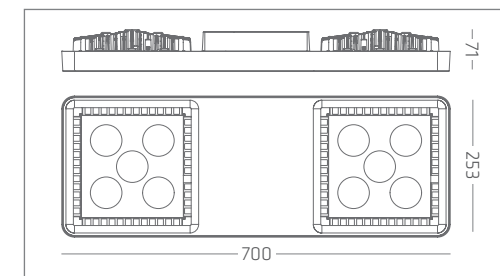
Smart [4] LB - 4L - 1,200mA DRIVING CURRENT - IP66 - IK08 (Body) - Glow Wire 650°/850°⁽¹⁾
5L - 1,100mA DRIVING CURRENT - IP66 - IK08 (Body) - Glow Wire 650°/850°⁽¹⁾



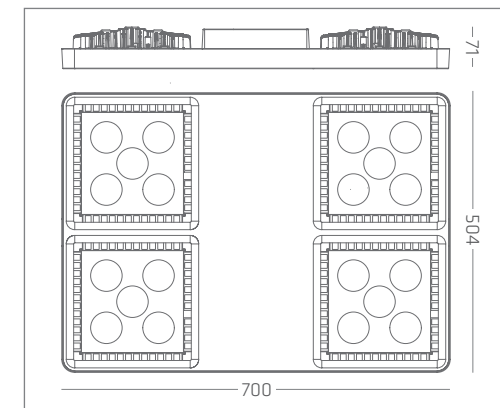
⁽¹⁾ In reference to the version with protective glass

High-bay luminaires

Smart [4] HB - 4+4L - 1,200mA DRIVING CURRENT - IP66 - IK08 (Body) - Glow Wire 650°/850°⁽¹⁾
5+5L - 1,100mA DRIVING CURRENT - IP66 - IK08 (Body) - Glow Wire 650°/850°⁽¹⁾



Smart [4] HB - 4x4L - 1,200mA DRIVING CURRENT - IP66 - IK08 (Body) - Glow Wire 650°/850°⁽¹⁾
4x5L - 1,100mA DRIVING CURRENT - IP66 - IK08 (Body) - Glow Wire 650°/850°⁽¹⁾



Colours



Grey

TECHNICAL DATA (REFERENCE Ta=25°C)		AVAILABLE VERSIONS							
		SMART [4] - LB 2L	SMART [4] - LB 2+2L	SMART [4] - LB 4L	SMART [4] - LB 5L	SMART [4] - HB 4+4L	SMART [4] - HB 5+5L	SMART [4] - HB 4x4L	SMART [4] - HB 4x5L
Lumen Output		2,800 lm	5,550 lm	5,550 lm	6,400 lm	11,150 lm	12,750 lm	22,300 lm	25,550 lm
System power		31W	62W	62W	69W	124W	138W	248W	276W
Equivalent power		58W FD	2x58W FD	2x58W FD	2x58W FD	250W ME	250W ME	400W ME	400W ME
Efficiency		90 lm/W	90 lm/W	90 lm/W	93 lm/W	90 lm/W	93 lm/W	90 lm/W	93 lm/W
Lifetime (L80)		80,000h	80,000h	80,000h	80,000h	80,000h	80,000h	80,000h	80,000h
Colour Temperature		4,000K	4,000K	4,000K	4,000K	4,000K	4,000K	4,000K	4,000K
CRI		≥ 80	≥ 80	≥ 80	≥ 80	≥ 80	≥ 80	≥ 80	≥ 80
Weight (Kg)		1.8 Kg	3 Kg	3 Kg	3.2 Kg	5.3 Kg	5.7 Kg	10.6 Kg	11.4 Kg
Installation	<i>Ceiling-mounting</i>	■	■	■	■	☐	☐	☐	☐
	<i>Trunking</i>	■	■	■	■	☐	☐	☐	☐
	<i>Rod (ties)</i>	☐	☐	■	■	☐	☐	☐	☐
	<i>Rod (plate)</i>	☐	☐	☐	☐	☐	☐	☐	☐
	<i>Suspension</i>	☐	☐	☐	☐	■	■	■	■
	<i>Bracket</i>	☐	☐	☐	☐	☐	☐	☐	☐
Optics	<i>10° spotlight</i>								
	<i>Restricted 30°</i>	GW L1 013	GW L1 043	GW L1 073	GW L1 113	GW L1 313	GW L1 343	GW L1 373	GW L1 413
	<i>Medium 60°</i>	GW L1 012	GW L1 042	GW L1 072	GW L1 112	GW L1 312	GW L1 342	GW L1 372	GW L1 412
	<i>Diffused 100°</i>	GW L1 011	GW L1 041	GW L1 071	GW L1 111	GW L1 311	GW L1 341	GW L1 371	GW L1 411
	<i>Elliptical</i>	GW L1 014	GW L1 044	GW L1 074	GW L1 114	GW L1 314	GW L1 344	GW L1 374	GW L1 414
	<i>asymmetrical</i>	▲	▲	▲	▲	▲	▲	▲	▲
Management	<i>Stand alone</i>	■	■	■	■	■	■	■	■
	<i>1-10V</i>	▲	▲	▲	▲	▲	▲	▲	▲
	<i>RF</i>	△	△	△	△	△	△	△	△
Accessories	<i>Bracket kit</i>	GW L1 921	GW L1 922	GW L1 923	GW L1 923	GW L1 924	GW L1 924	GW L1 925	GW L1 925
	<i>Adjustable suspension kit</i>	GW L1 901	GW L1 901	GW L1 901	GW L1 901	Included	Included	Included	Included
	<i>Ceiling kit</i>	Included	Included	Included	Included	GW L1 927	GW L1 927	GW L1 928	GW L1 928
	<i>Rod kit</i>	☐	☐	GW L1 926	GW L1 926	4 x GW L1 926	4 x GW L1 926	☐	☐
	<i>Protective glass</i>	GW L1 902	2 x GW L1 902	GW L1 903	GW L1 903	2 x GW L1 903	2 x GW L1 903	4 x GW L1 903	4 x GW L1 903
	<i>Vandal-proof / safety kit</i>	Included	GW L1 905	GW L1 905	GW L1 905	2 x GW L1 905	2 x GW L1 905	2 x GW L1 905	2 x GW L1 905

■ Standard ☐ Accessory ☐ Non envisaged ▲ Upon request △ Under development

¹In reference to the version with 100° diffused optic

[LCCA] *Life Cycle Cost Analysis*

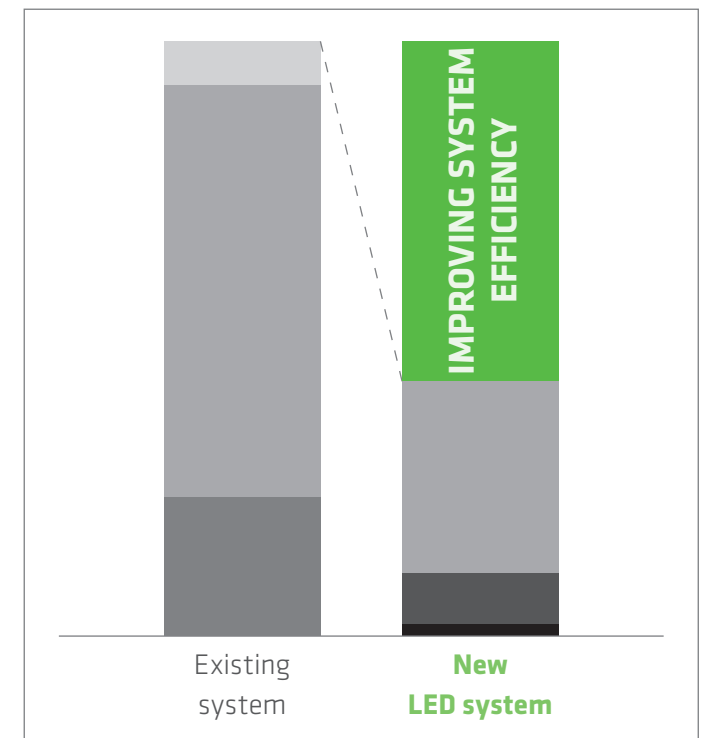
How to obtain improved system efficiency?

Summary

To establish or better understand the importance of an efficiency increasing intervention, an analysis can be performed that makes it possible to compare the operating, maintenance and installation costs between an existing system and a new system. The Life Cycle Cost Analysis (LCCA) is the criteria used by the American energy department, which evaluates all the project costs over a certain period of time.

The following indicators are considered:

- *replacement cost (obsolete products)*
- *operating cost*
- *relamping cost*
- *product cost*
- *installation cost*



Smart [4] was developed by the GEWISS research centres to reduce the Total Life Cycle Cost and therefore make it affordable to replace lighting systems.

L C C A

1. Performance

Smart [4] was developed by the GEWISS research centres to reduce the Total Life Cost Cycle and therefore make it affordable to replace lighting systems.

3. Configuration

Various fixing systems ensure flexible use in any type of application.

2. Energy consumption

Using Smart [4] products instead of traditional light sources yields energy savings of up to 60% possible in comparison to recent systems and of up to 80% in comparison to obsolete or poorly maintained systems.

4. Installation

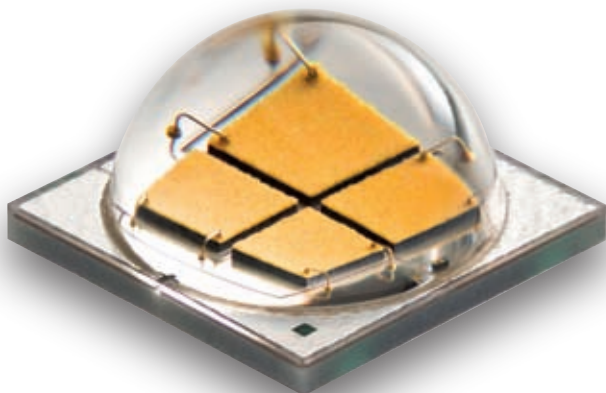
The entire range of Smart [4] products was designed and developed to make it very easy to install and retrofit on existing devices in obsolete systems.

1. Performance

Efficiency and maintenance of performance over time

Power LED

The Smart [4] devices are equipped with Power LEDs. The types selected, which are supplied with colour temperature 4000K, guarantee high levels of light efficiency, low flow decay, long duration and excellent colour performance.



Why select Power LED

From a photometric point of view, the substantial difference between a Power LED and Midpower LED array lies in its focus.

In the case of the Array, the dimensions of the emitting area cause a part of the flux to not be perfectly controlled by the reflector; for Power LEDs, the focus is more precise; furthermore, the smaller dimensions make it possible to use TIR lenses, which makes it possible to implement very controlled photometric systems with a high utilization factor.

The Power LEDs also provide better colour consistency over time, which makes it possible to have a uniform colour in installations with a large number of lighting devices and a colour yield that is constant over time. The possibility of selecting a high quality Power LED (high BIN) makes it possible to obtain identical colour performances, to implement lighting systems where it is very difficult to detect colour differences between the luminaires.

In the case of a Midpower LED Array, the quality selection is generally less reliable or consistent.

The permanent color in time



Smart [4] - 4.000 K - CRI 80



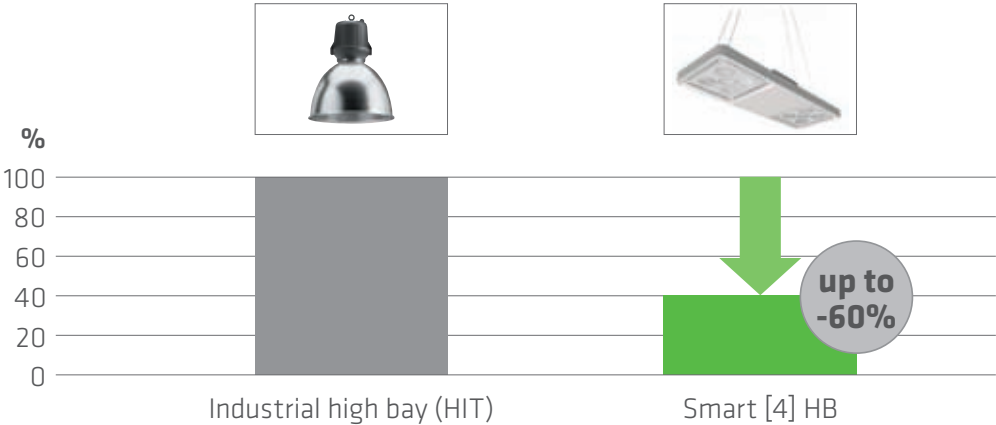
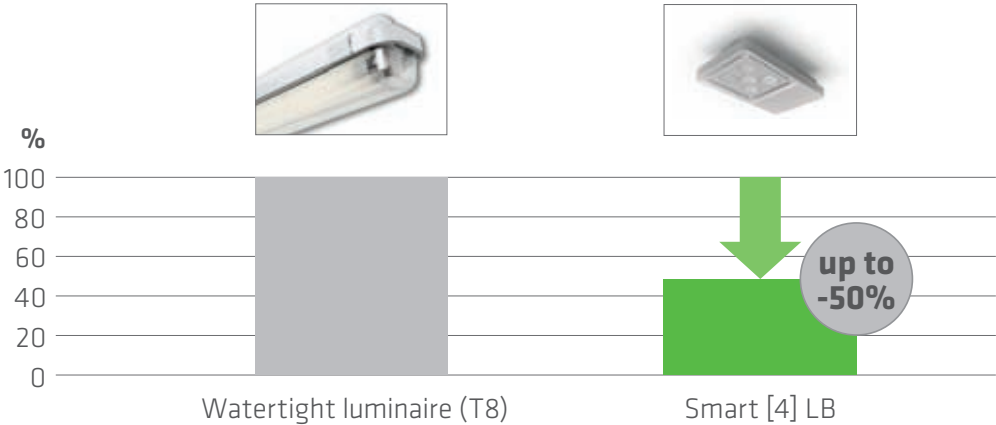
Neon - 3.600 K - CRI 70

2. Energy consumption

How to break down the energy costs of your systems

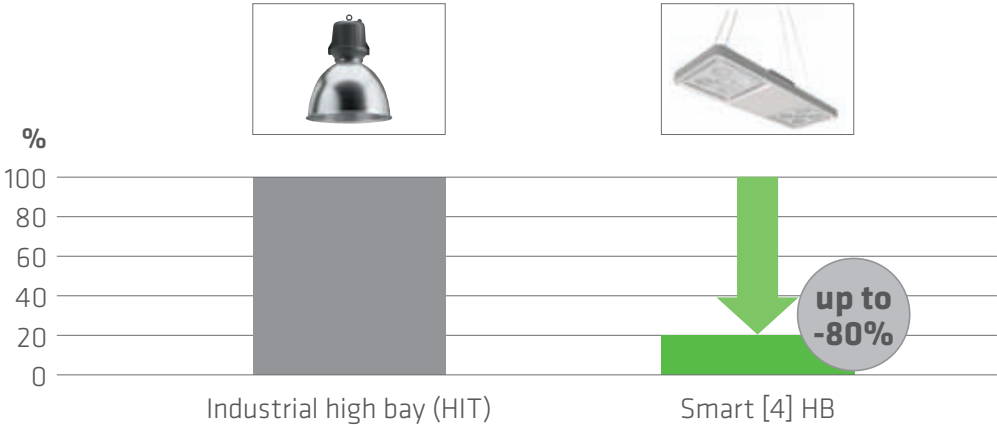
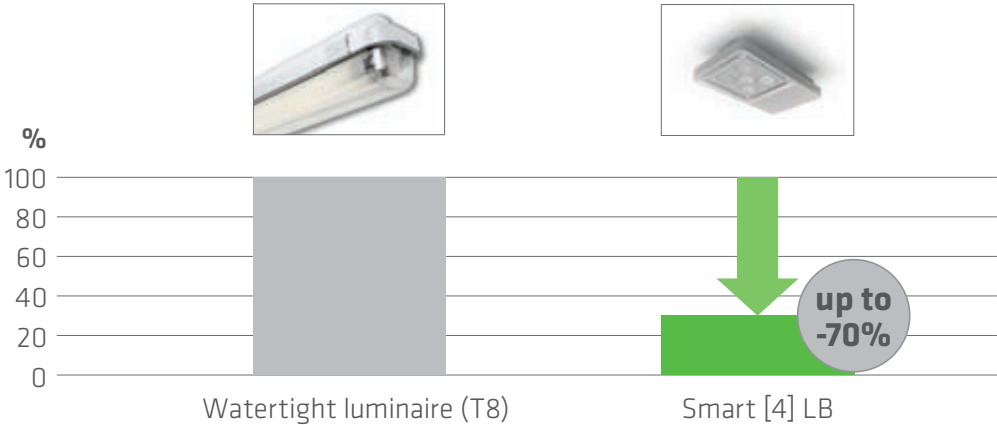
New system

Comparison between traditional and LED technologies



Obsolete or poorly maintained system

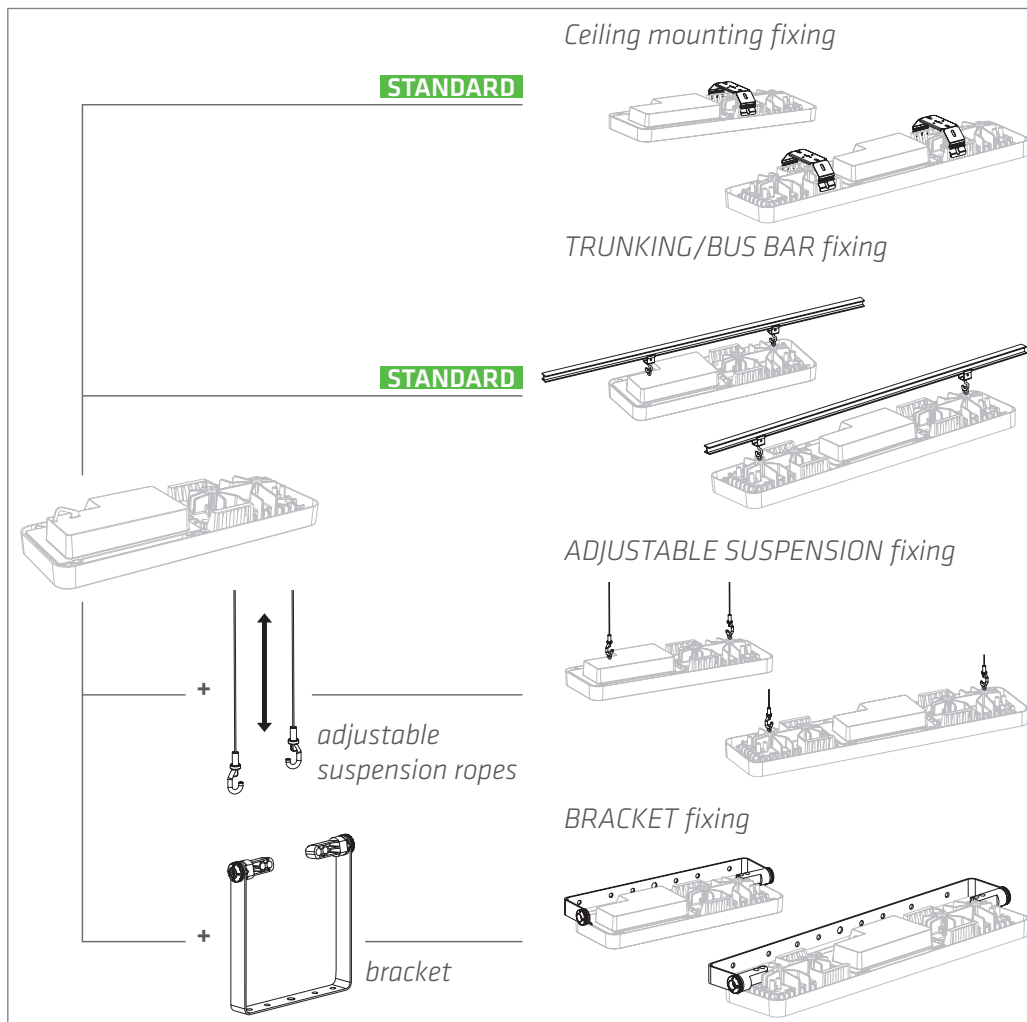
Comparison between traditional and LED technologies



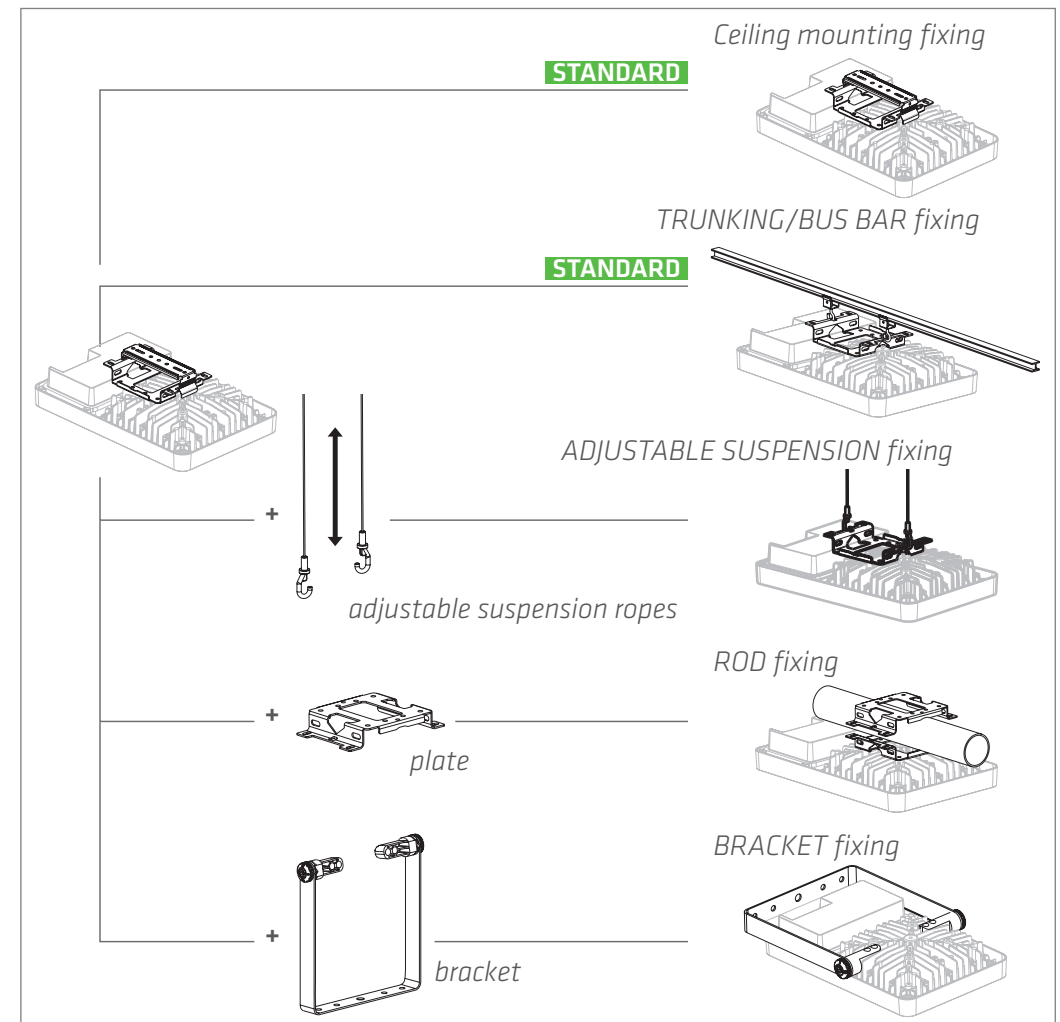
3. Configuration

The Smart[4] system consists of a complete range of fixing systems for every type of application

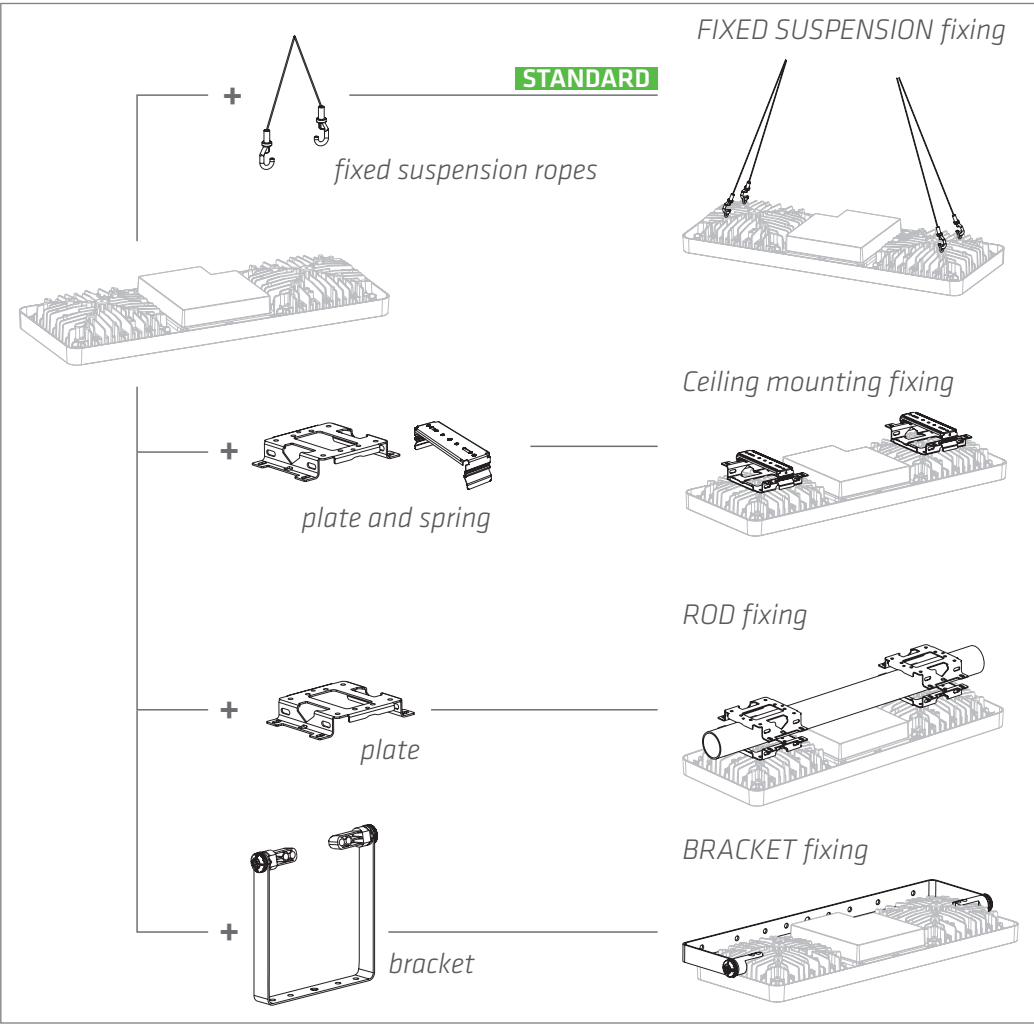
Smart [4] LB 2L and Smart [4] LB 2+2L



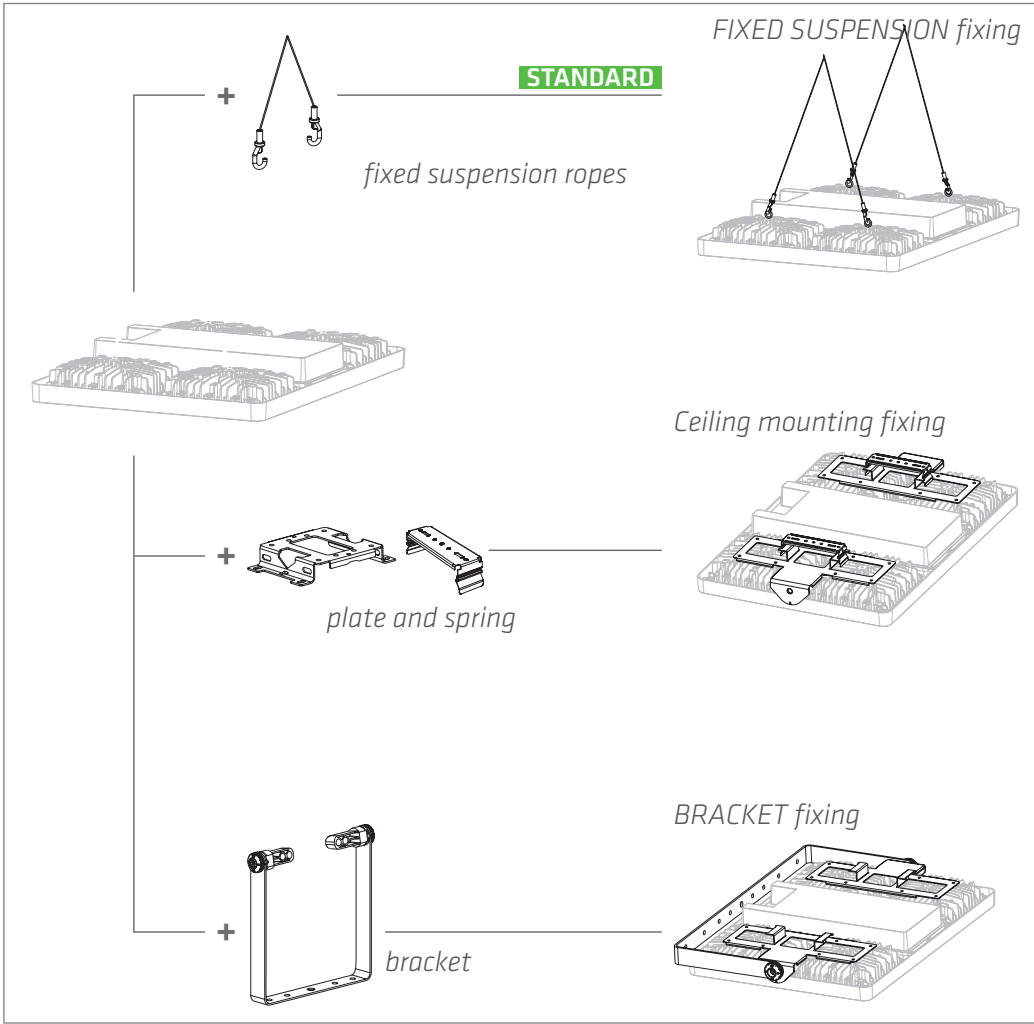
Smart [4] LB 4L|5L



Smart [4] HB 4+4L|5+5L



Smart [4] HB 4x4L|4x5L

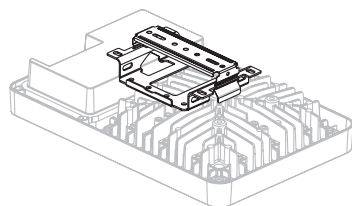


4. Installation

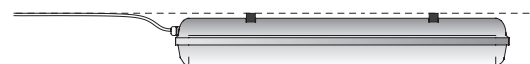
A one-by-one replacement is the easiest, most economic and reliable solution that makes it possible to minimise the cost of the first installation, making it comparable with a simple relamping

Ease of installation/replacement

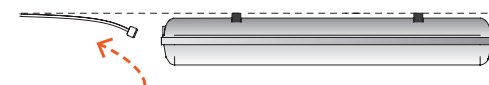
Ceiling mounting fixing



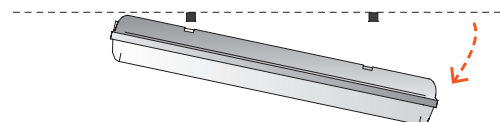
Standard kit for Smart [4] LB for ceiling mounting fixing



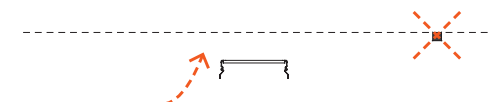
1. Fitting to be replaced



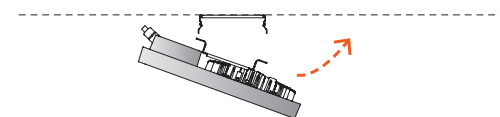
2. Electrical disconnection of fitting to be replaced



3. Mechanical disassembly of the device to be replaced



4. Installation of the new Gewiss spring



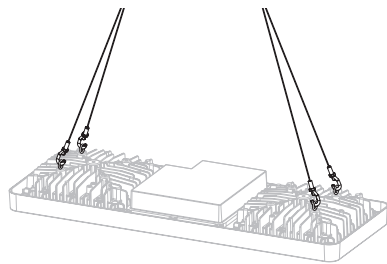
5. Mechanical connection of Smart [4] LB



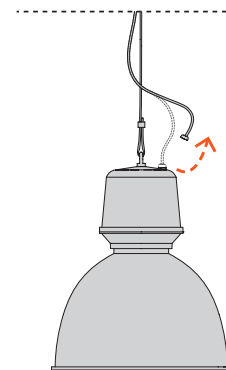
6. Electrical connection of Smart [4] LB

N.B. only one of the existing coupling points will be used

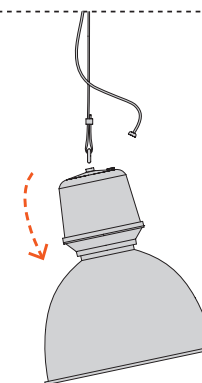
SUSPENSION fixing



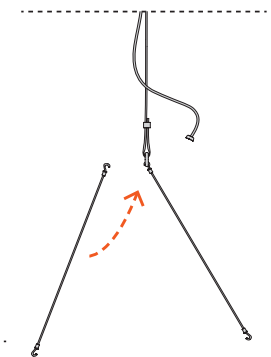
Standard kit for Smart [4] HB for suspension fixing



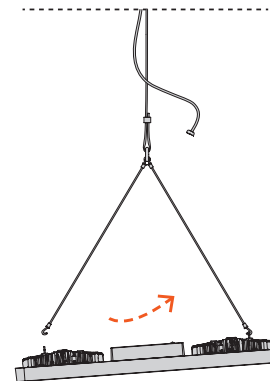
1. Electrical disconnection of fitting to be replaced



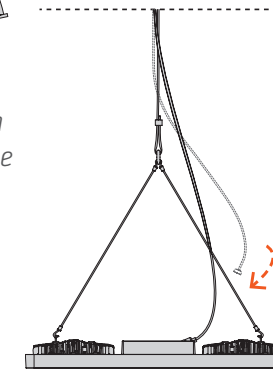
2. Mechanical disconnection of fitting to be replaced



3. Installation of Gewiss suspension cables



4. Mechanical connection of Smart [4] HB.



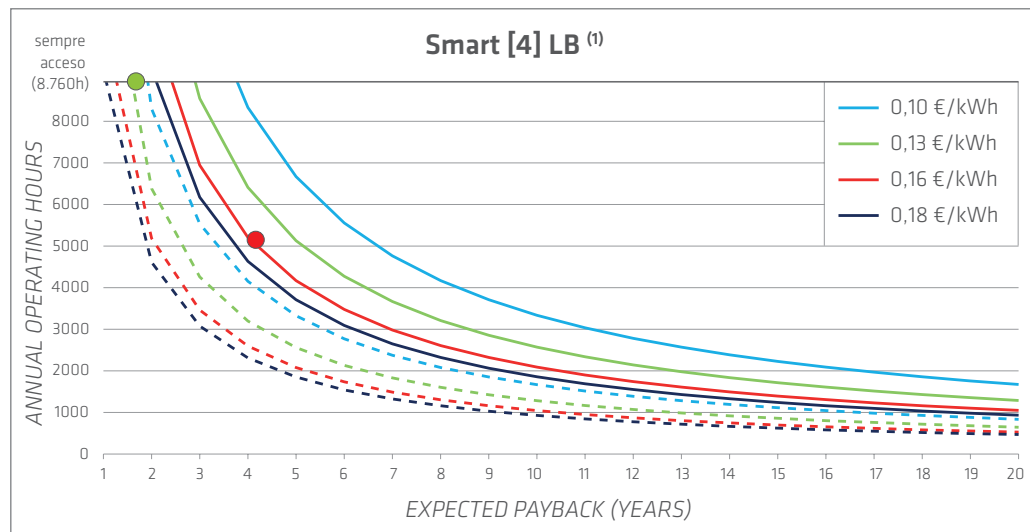
5. Electrical connection of Smart [4] HB.

N.B. the accessory is used to position the photometric centre exactly at the same height as those of the replaced product.

LCCA Pay back

Improve lighting without changing the existing electrical system

Pay back expected for the hours worked, energy cost and condition of the system
based on the hours used and cost of energy



● Example: assembly

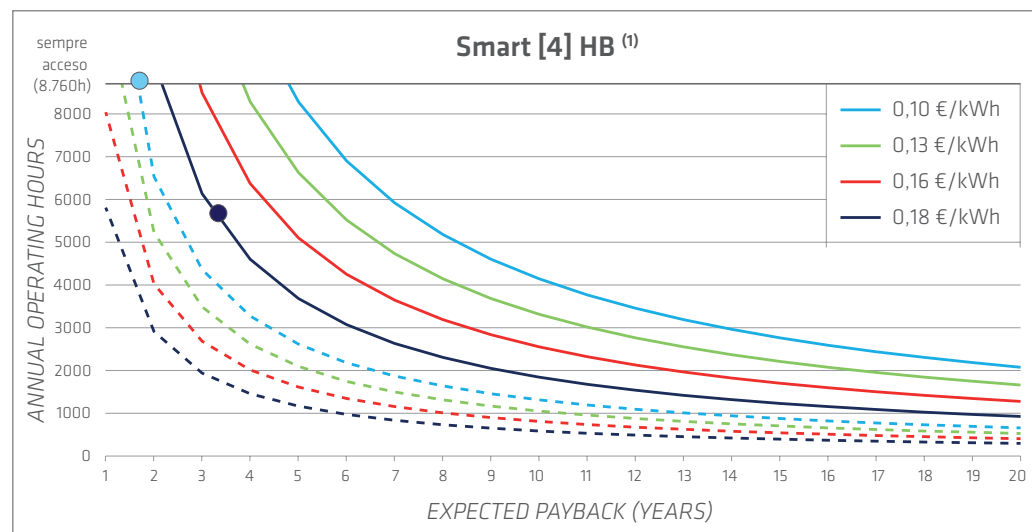


- Three shifts for 220 working days: approx. 5,300 hours per year
- Correctly maintained system and intermediate energy cost: 0.16€/kWh
- **Expected pay back: little more than 4 years**

● Example: Underground parking area



- Always on: 8,760 hours a year
- System poorly maintained or obsolete and energy cost below the average: 0.13€/kWh
- **Expected pay back: <2 years**



● Example: foundry



- Always on: 8,760h
- System poorly maintained or obsolete and energy cost much below the average: 0.08 €/kWh
- **Expected pay back: <2 years**

● Example: Logistics



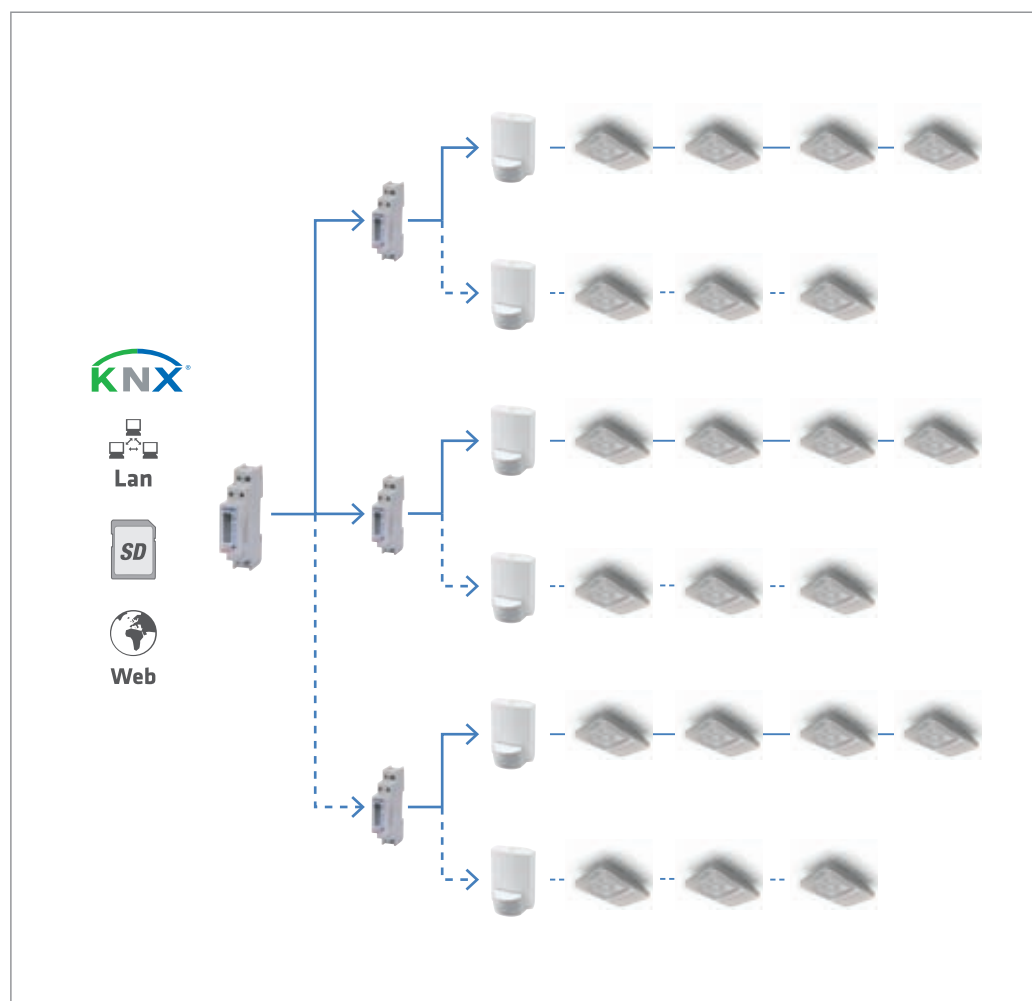
- Two shifts for 350 working days: approx. 5,600 hours per year
- Correctly maintained system and average energy cost: 0.18€/kWh
- **Expected pay back: little more than 3 years**

¹ The continuous curves refer to the energy cost for a recent system, the dotted lines for a system that is more than 10 years old or in any case obsolete.

System management

Smart [4] offers different methods for managing the systems and measuring consumption

Systems for stand alone management of switching on/off and consumption measurement



Gewiss GW D6 801;

Consumption measurement system.

It makes it possible to monitor instantaneous power and accumulated consumption. Maximum load 32A; larger versions available upon request.

It can interface (available upon request) with data storage devices or communication standards.

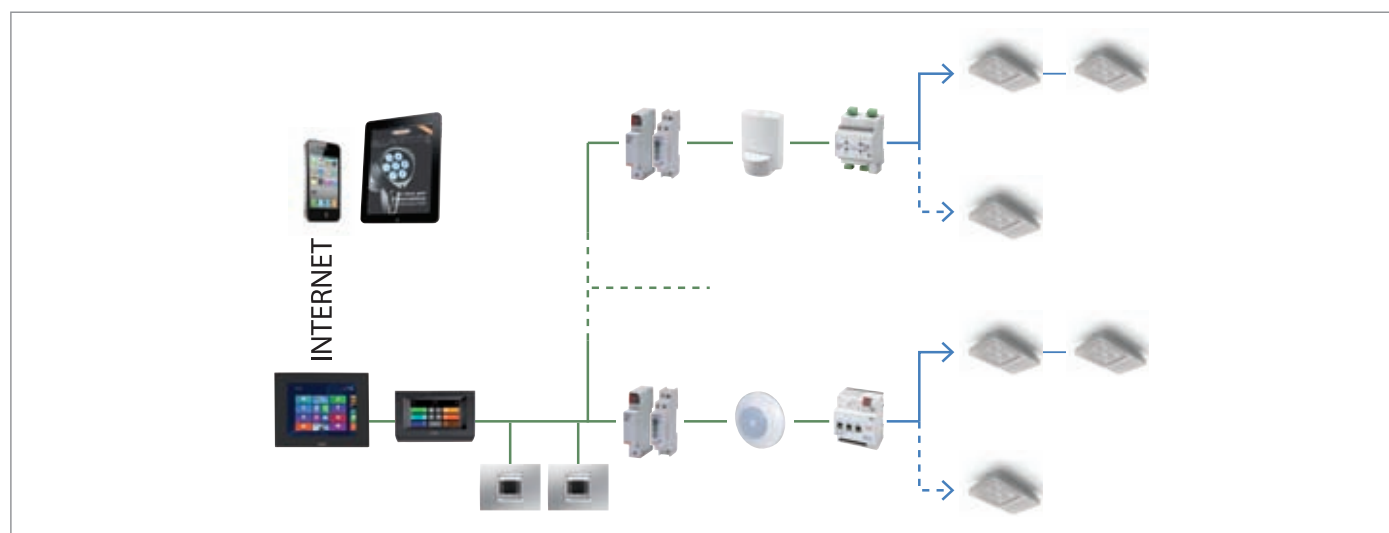


Gewiss GW 27 431 A;

Movement and luminosity detector (max 2000lux) for surface-mounting installation (max h=2m). Maximum switching load 3AX: from the point of view of maximum installation flexibility and if multiple detectors control the switching on of the same group of devices, it is recommended to install a support relay.

If you decide to install the detection system on the ceiling, take into consideration the effective positioning height and the area that will be monitored so that switching takes place correctly and quickly. Attention: the movement detectors are suitable for areas in which activities are performed where macro movements are requested; contact customer service to assess the need for presence sensors.

KNX BUS systems: management of integrated lighting in the building system



Application

Thanks to the KNX system, lighting management, with on/off control or with constant luminosity control, can be enriched with additional functions and can be integrated in the management of the entire building:

- **Measurement of consumption:** possible for each area using the KNX energy meter.
- **Manual controls:** using the KNX push-button panel, it is possible to manually control the lighting devices.
- **Line status monitoring:** possibility of acquiring the status of the line circuit breakers via KNX (open/closed/tripped).

- **Supervision:** all functions, consumption and line status can be managed and controlled by a supervision system with pages that physically reproduce the various system areas. Remote control via internet from your smart-phone, tablet and PC:
 - control of consumption, on/off status of the lighting devices, status of the circuit breakers, etc.;
 - alarm notification emails or SMS.

Devices



MASTER ICE;
touch panel (10" and 15") for remote supervision and control via internet



NAXOS DOMO;
touch panel (4.8") for local supervision.



GW 10 782;
KNX push-button panel for manual controls. Other types of push-button panels: GW 10 782, GW 10 783, GW 90 721 A, GW 10 741.



KNX energy meter;
consisting of two codes GW D6 801 and GW 90 876, for measuring absorbed power (max current max 32A) and consumed energy (for currents higher than 32A contact Gewiss customer service).

ATTENTION: for the electric characteristics and installation requirements, refer to the product's technical documentation.



Flood lighting

Smart [4] FL

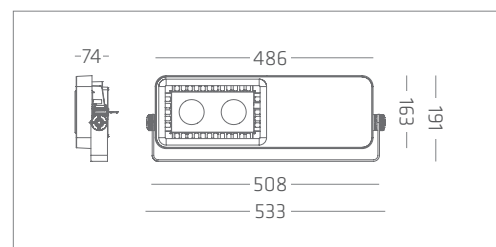
LED lighting floodlights.

- Frame in technopolymer.
- Dissipator, glass holder and bracket coupling in die-cast aluminium with very low copper content.
- Tempered glass th. 4mm.

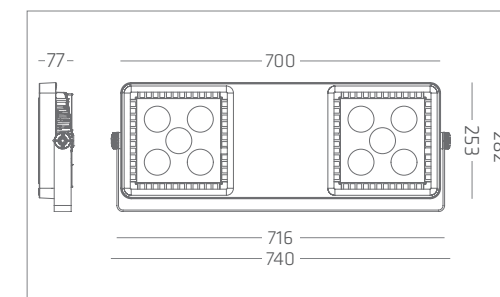
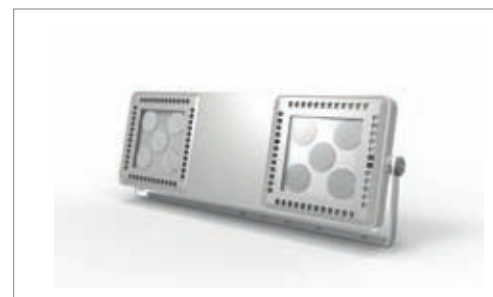
- Fixing plate in galvanized iron.
- IP 66
- IK 08
- Glow wire 850°



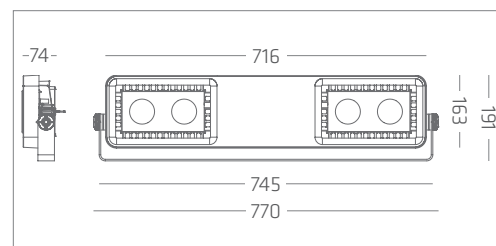
Smart [4] FL - 2L - 1,200mA DRIVING CURRENT - IP66 - IK08 - Glow Wire 850°



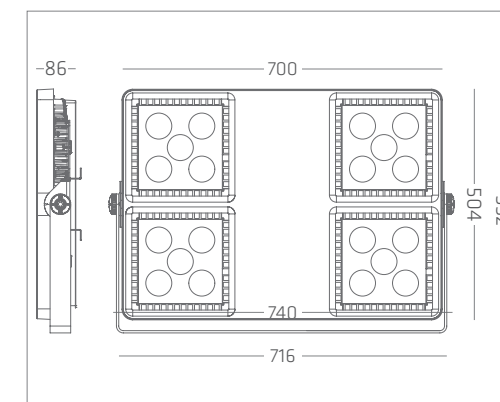
Smart [4] FL - 5+5L - 1,100mA DRIVING CURRENT - IP66 - IK08 - Glow Wire 850°



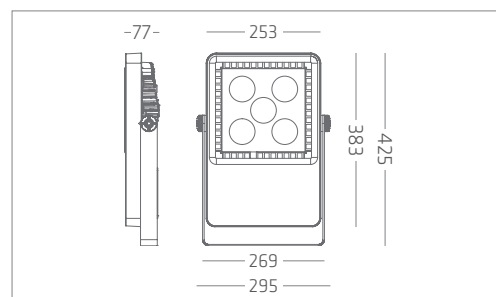
Smart [4] FL - 2+2L - 1,200mA DRIVING CURRENT - IP66 - IK08 - Glow Wire 850°



Smart [4] FL - 4x5L - 1,100mA DRIVING CURRENT - IP66 - IK08 - Glow Wire 850°



Smart [4] FL - 5 LED - 1,100mA DRIVING CURRENT - IP66 - Glow Wire 850°



Colours



Grey

TECHNICAL DATA (REFERENCE Ta=25°C)		AVAILABLE VERSIONS				
		Smart [4] - FL 2L	Smart [4] - FL 2+2L	Smart [4] - FL 5L	Smart [4] - FL 5+5L	Smart [4] - FL 4x5L
Lumen Output		2,350 lm	4,700 lm	5,350 lm	10,750 lm	21,500 lm
System power		31W	62W	69W	138W	276W
Equivalent power		35W MH	70W MH	100W MH	250W MH	400W MH
Efficiency		76 lm/W	76 lm/W	78 lm/W	78 lm/W	78 lm/W
Lifetime (L80)		80,000h	80,000h	80,000h	80,000h	80,000h
Colour Temperature		4,000K	4,000K	4,000K	4,000K	4,000K
CRI		≥ 80	≥ 80	≥ 80	≥ 80	≥ 80
Weight (Kg)		2.3 Kg	3.5 Kg	3.7 Kg	6.7 Kg	12.9 Kg
Installation	Bracket	■	■	■	■	■
Optics	10° spotlight	GW L1 611	GW L1 641	GW L1 671	GW L1 711	GW L1 741
	Restricted 30°	GW L1 612	GW L1 642	GW L1 672	GW L1 712	GW L1 742
	Medium 60°	GW L1 613	GW L1 643	GW L1 673	GW L1 713	GW L1 743
	Diffused 100°	▲	▲	▲	▲	▲
	Elliptical asymmetrical	GW L1 614 GW L1 615	GW L1 644 GW L1 645	GW L1 674 GW L1 675	GW L1 714 GW L1 715	GW L1 744 GW L1 745
Management	Stand alone	■	■	■	■	■
	1-10V	▲	▲	▲	▲	▲
	RF	△	△	△	△	△

■ Standard □ Accessory □ Non envisaged ▲ Upon request △ Under development

¹In reference to the version with 10° spotlight optic

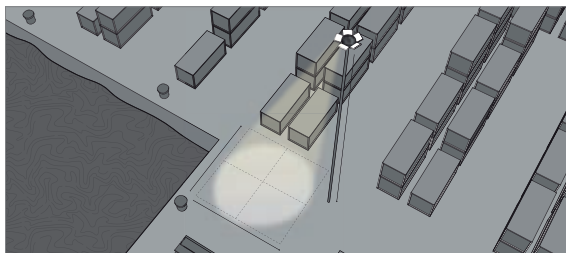
Smart [4] FL = Form + Function

Smart[4] offers a complete range of photometric distributions with particular reference to narrow beam optics, which make it possible to have an efficient and rational system. It is possible, in fact, to avoid the dispersion of the light flux by directing it entirely on the surface to be illuminated.

Smart [4] - FL 5x5L + 10° spotlight optic

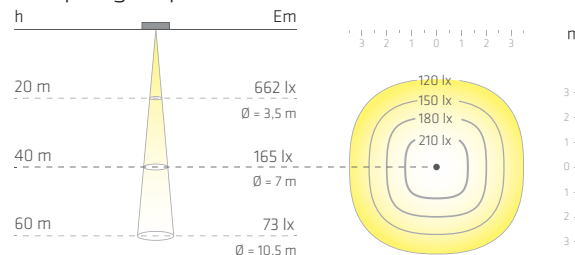


Example: Industrial area

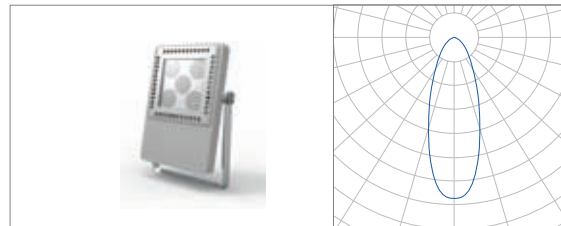


Smart [4] - FL 4x5L
20LED - 276W - 21,500lm - 400W MH equivalent

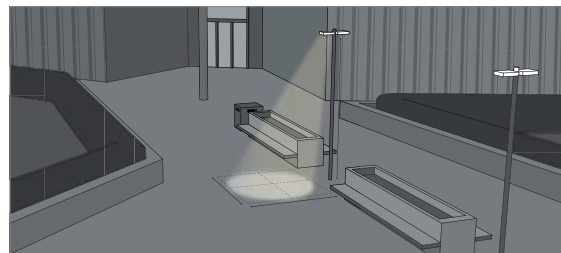
10° spotlight optic



Smart [4] FL 2+2L + 30° restricted beam optic

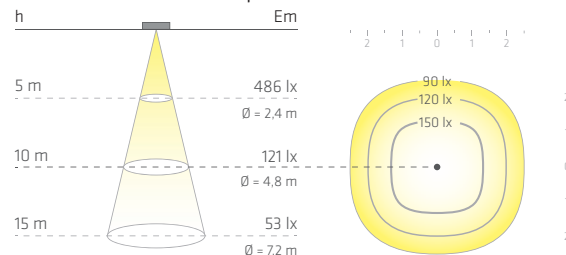


Example: Commercial areas

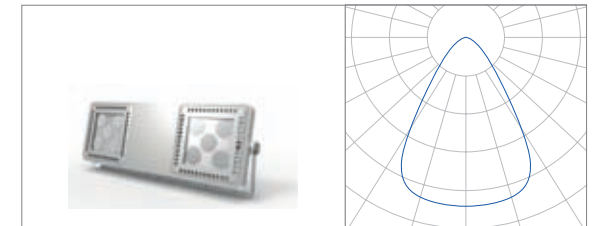


Smart [4] - FL 5L
5LED - 69W - 5,350lm - 100W MT equivalent

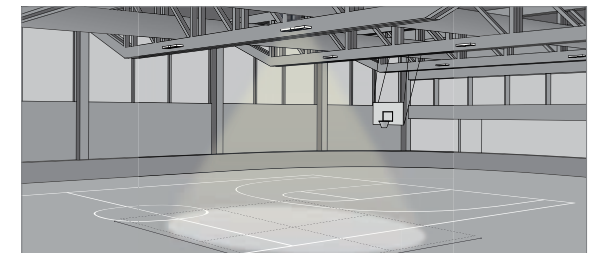
30° restricted beam optic



Smart [4] - FL 5+5L + 60° medium optic

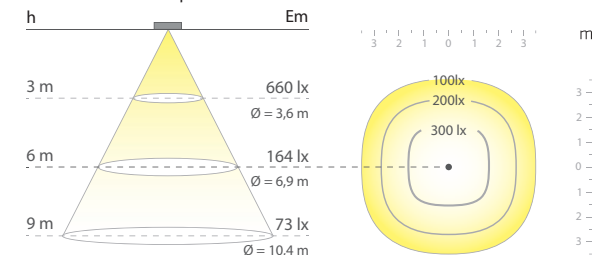


Example: Sporting facilities



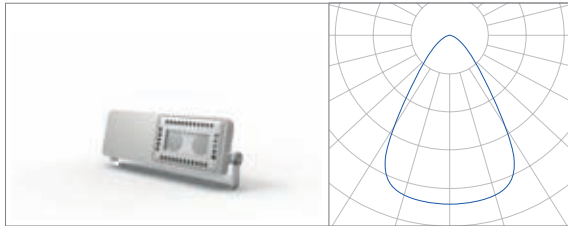
Smart [4] - FL 5+5L
10LED - 138W - 10,750lm - 250W MT equivalent

60° medium optic

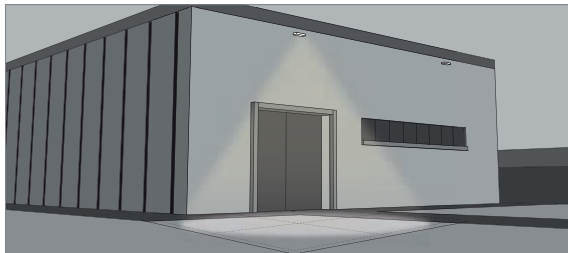


The family of floodlighting luminaires consists of different sizes and shapes able to be used in all application areas.

Smart [4] FL 2L + 60° medium optic

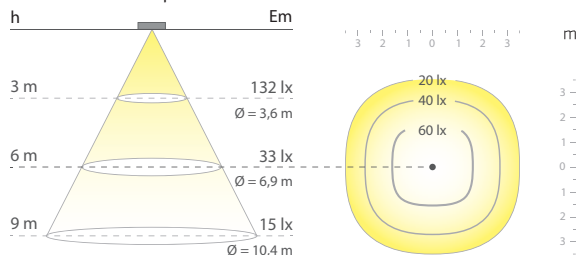


Example: Safety lighting

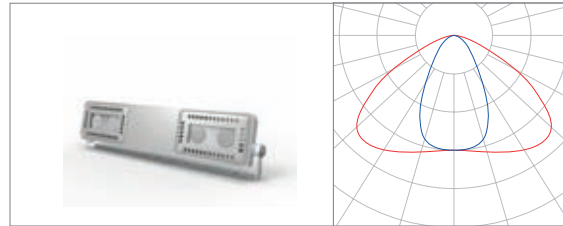


Smart [4] - FL 2L
2LED - 31W - 2,350lm - 35W MT equivalent

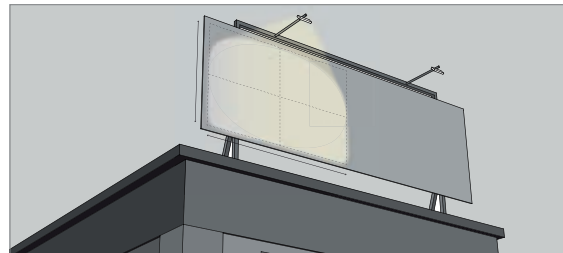
60° medium optic



Smart [4] FL 2+2L + elliptical optic

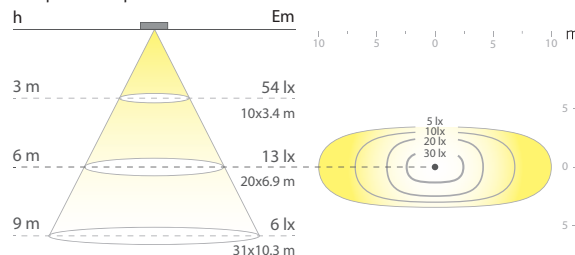


Example: Advertising boards

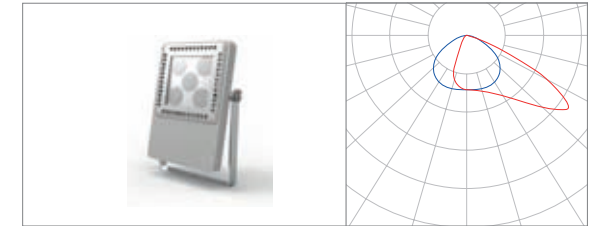


Smart [4] - FL 2+2L
4LED - 62W - 4,700lm - 70W MT equivalent

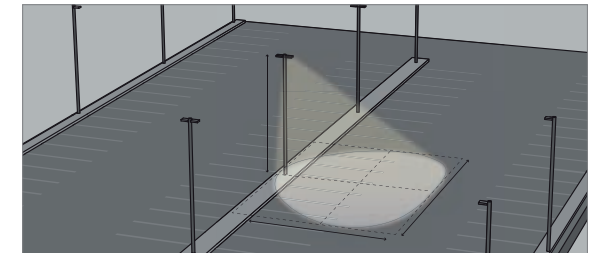
Elliptical optic



Smart [4] - FL 5L + asymmetrical optic

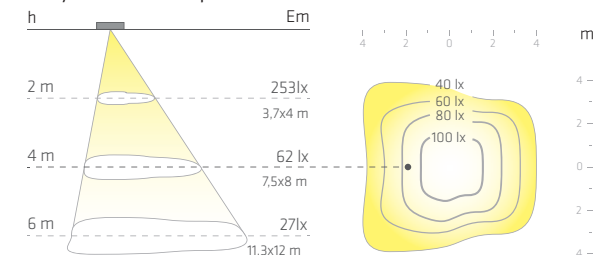


Example: Parking area



Smart [4] - FL 5L
5LED - 69W - 5,350lm - 100W MT equivalent

Asymmetrical optic





Smart technology [4]

Using LED technology, Gewiss offers a range of innovative products to implement more effective lighting systems. The LFM technology (patent pending) makes it possible to obtain maximum energy savings for the best visual comfort for the most complex visual tasks.

Summary

The Smart [4] system consists of a base LED module equipped with dedicated optical systems (reflector, reflector + lens, lens) to maximise the use of the light flux based on the specific use.

Objective

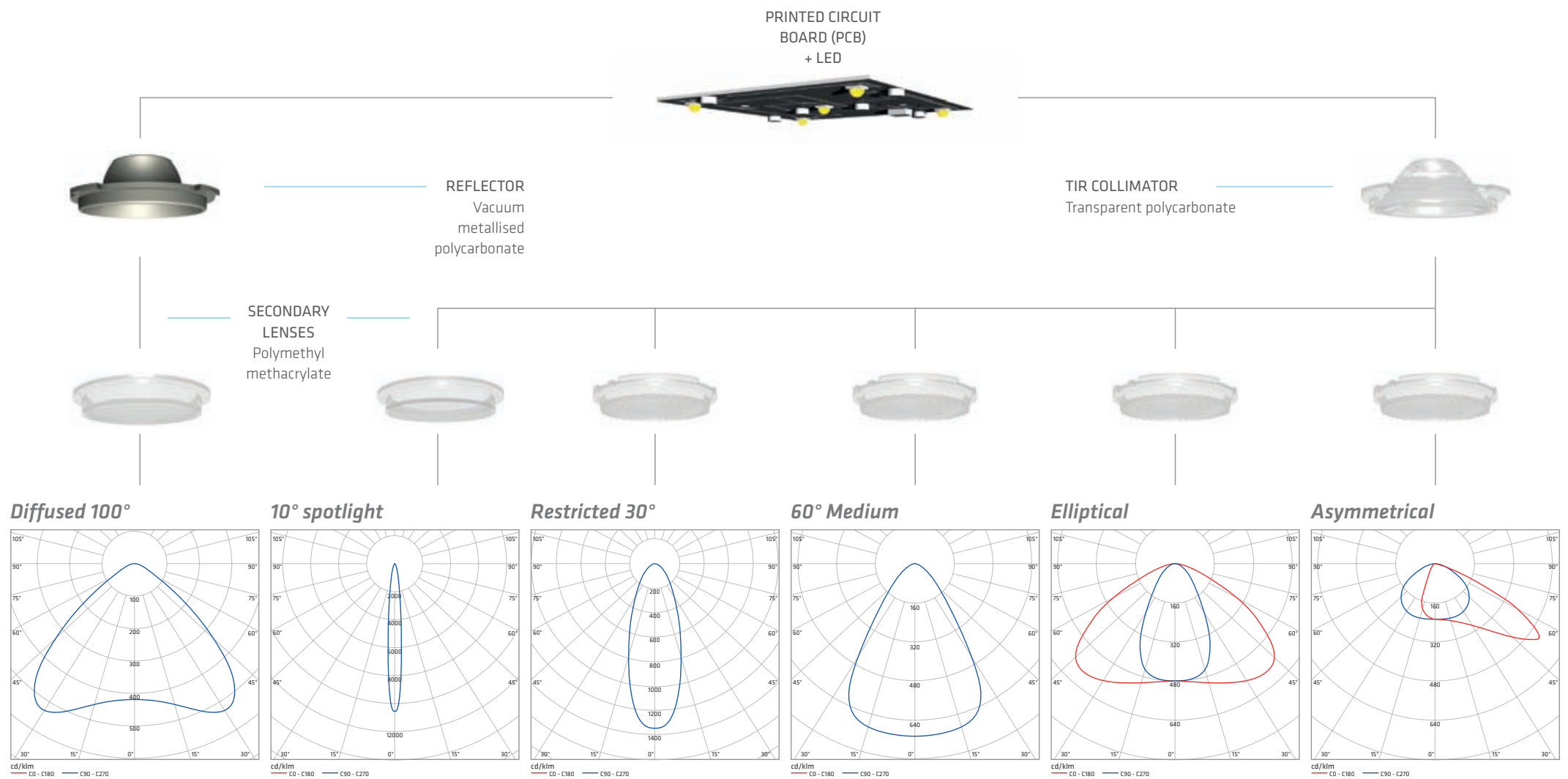
The option of including LED modules in different configurations permits maximum design flexibility, with the obvious purpose of obtaining targeted and effective lighting together with maximum energy and maintenance savings.

Advantages

The use of power LEDs with high colour performance, high efficiency optical systems (reflector and lenses) and the availability of multiple configurations make the Smart [4] system an ideal instrument for minimizing costs (for operating and maintenance) maximizing lighting performance.

Module Design

Maximum application flexibility



Gewiss R&D: the optical system

Lens design

Gewiss has decided to use a secondary optic composed of a reflector and lens to obtain the best performance and optimal distribution of the light flux. The optical system was designed using 3D modelling in order to define the geometries with utmost precision. The reflector is made out of PC, metallised by means of evaporation in a vacuum chamber, whereas the secondary lens (diffuser) is made in plexiglass and does not present the risk of yellowing or loss of transparency, thereby maintaining its performance over time.

Phase 1 - Analysis: this is the phase in which the project is defined, the objectives and regulatory needs are analysed, the project parameters and variables are defined.

Phase 2 - CAD Modelling: the use of 3D CAD software creates a computerised model of the parts of the design and changes can be made.

Phase 3 - Simulation: the intrinsic properties of the materials and surfaces are applied to the model. The geometric definition of the sources allows a simulation of the real behaviour of the system.



10° spotlight



Restricted 30°



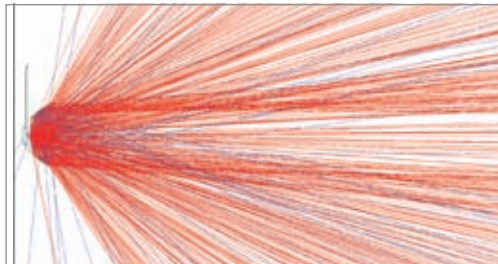
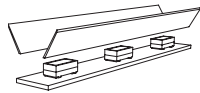
60° medium



Diffused 100°

Optical Control: the Gewiss solution

**MID POWER LED
+ REFLECTOR**

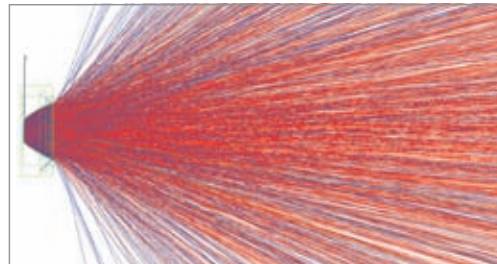
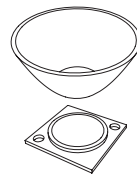


The emitted flux cannot be managed precisely by any optical system

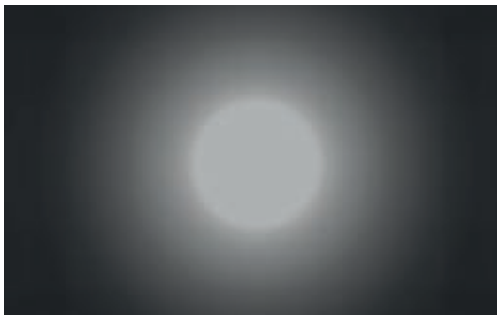


*Strip with Mid Power LED
+ high bay:
typical beam opening >90°*

**LED ARRAY
+ REFLECTOR**

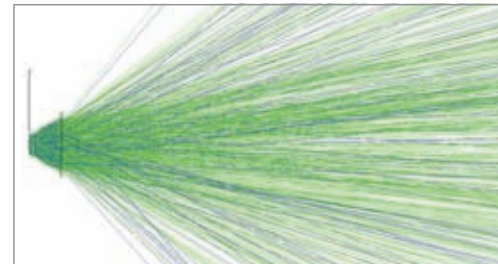
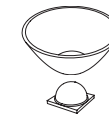


The emitted flux is not managed well by a small sized reflector



*LED Array \varnothing 16mm
+ parabolic high bay \varnothing 45mm:
typical beam opening 30°*

**POWER LED
+ REFLECTOR**

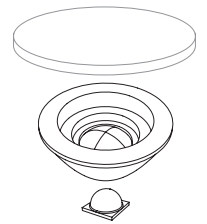


Better solution than the previous one, but not extremely precise

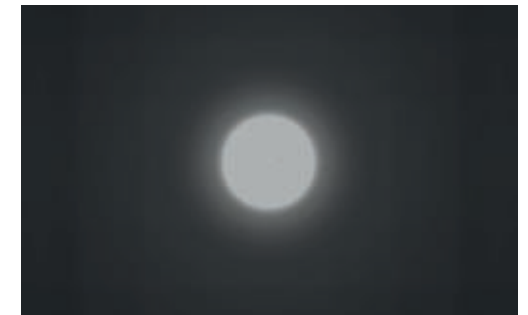


*Power LED 4mm²
+ parabolic high bay \varnothing 35mm:
typical beam opening 24°*

**GEWISS SOLUTION
POWER LED
+ TIR COLLIMATOR
+ SECONDARY LENS**



The light flux is controlled in an excellent manner



*Power LED 4mm²
+ TIR collimator \varnothing 45mm:
typical beam opening 10°*

Gewiss R&D: thermal sizing

Dissipator Design

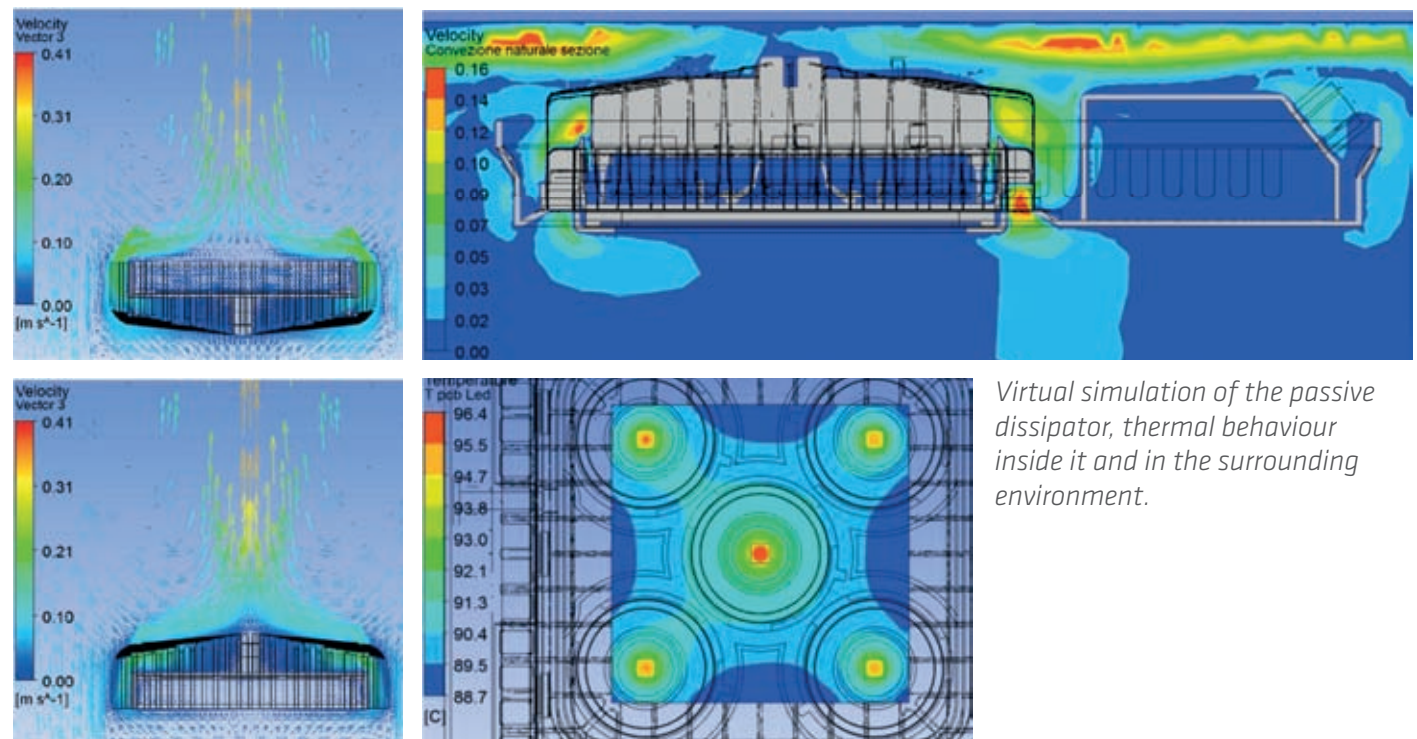
If not dissipated properly, the heat produced during operation of the LED chip can lead to an alteration of the quantitative and qualitative performance, including luminous efficiency, average lifespan, and the spectral emission. Gewiss has decided to create a dissipator in die-cast aluminium with very low copper content that is sized in a way to guarantee correct operation of the diodes.

Careful preliminary studies, carried out using dedicated software and validated by sample testing, ensure optimal conditions of operation.

Heat exchange

Heat dispersion in the lighting device is guaranteed by the correct size of the passive dissipator located directly in contact with the printed circuit board and heat paths that promote heat exchange between the device and the outside environment.

Smart [4], designed according to integrated thermal criteria, uses even the smallest movement of the air to dissipate the heat.



Virtual simulation of the passive dissipator, thermal behaviour inside it and in the surrounding environment.



GEWISS

LIGHT UP THE FUTURE.

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