



Whitecroft
Lighting

Industrial Lighting

Today's advanced premises have to meet the demands of ever faster moving business.

Modern, efficient manufacturing and logistics facilities must provide low energy and low cost working environments. Our solutions not only meet these requirements, but also provide high levels of comfort across the entire workplace. This results in a reduction in capital cost, energy and operational cost, whilst at the same time increasing efficiency and productivity.

How to use this guide

Throughout this lighting guide we will look at the different operational areas key to an industrial development. We will assess the varying needs of these areas by four key criteria:

- Energy & Sustainability
- Lighting Requirements
- The User Experience
- Maintenance

We will demonstrate how, by using specifically designed lighting solutions, you can meet the differing demands on the space dictated by these criteria and deliver high quality, low energy lighting solutions.



Exteriors



Sirocco Park



Selise Maxi

Manufacturing



Aerial Twin



Selise High Bay

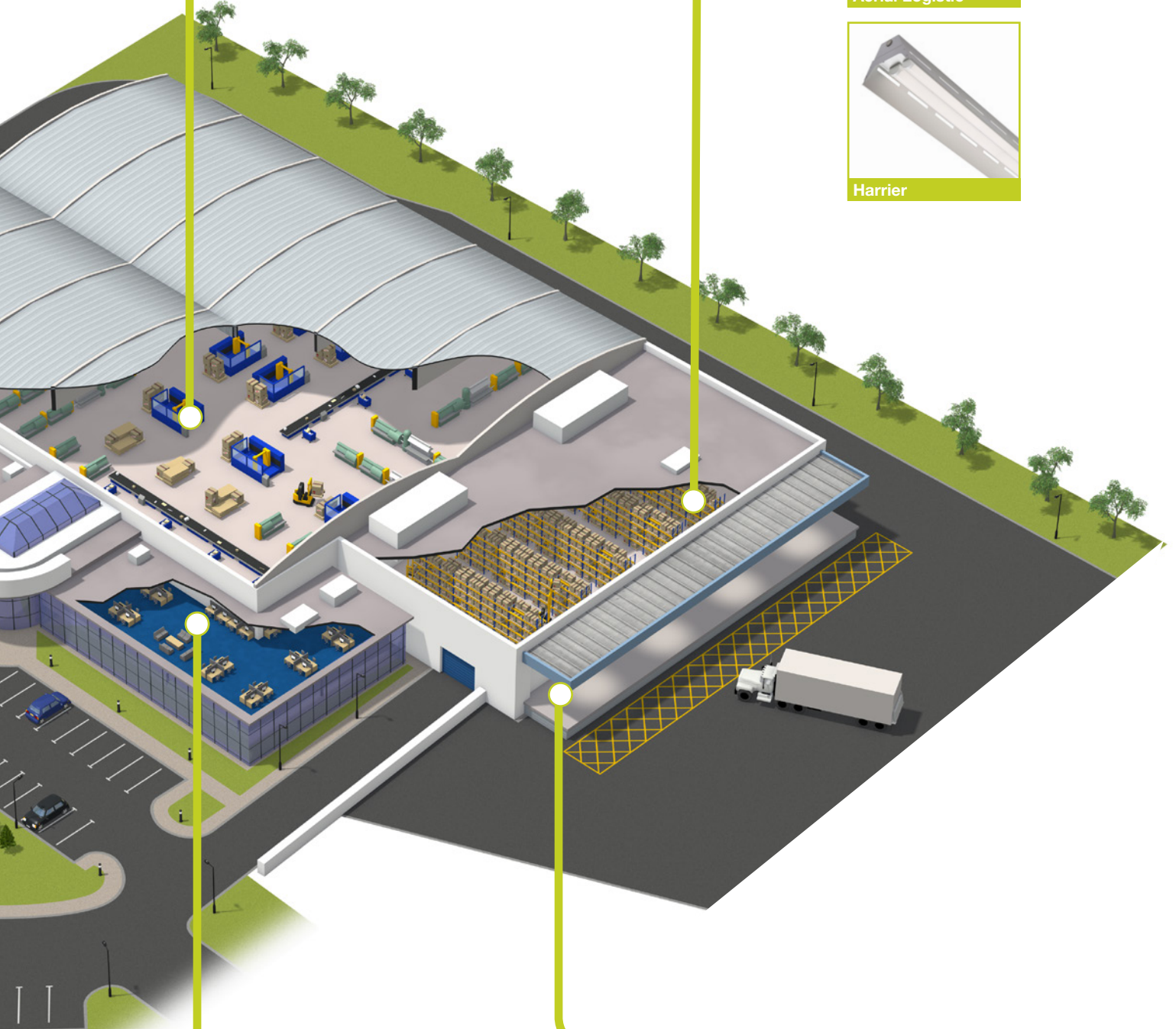
Logistics



Aerial Logistic



Harrier



Loading



ACL Park



Kolo IP65

Office & Social spaces



Avenue



Cascade LED



Reducing the total cost of ownership

Reducing the cost of lighting in any application is not simply a matter of reducing energy. Whilst utilising energy efficient lighting is the mainstay of cost reduction, there are other factors which affect the overall ownership cost. Maintenance can be costly, particularly in industrial applications where access is both difficult and disruptive to productivity, and lighting controls can bring significant additional savings to any application.



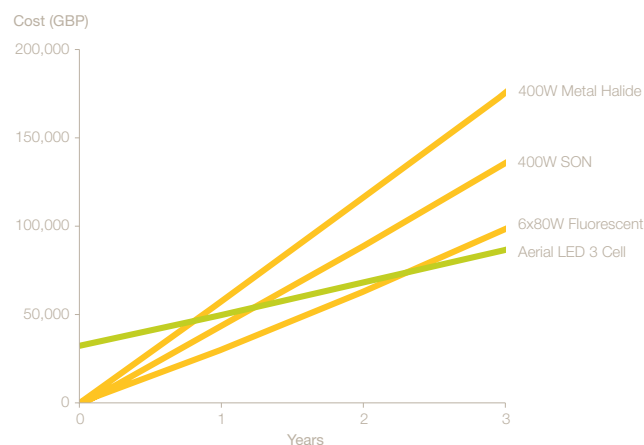
Choosing the right source

Any reduction in energy consumption starts with using the most energy efficient luminaire. In most instances, LED technology will out-perform traditional sources, usually by at least 50%. The latest generation of LED luminaires can achieve this level of performance without the high initial costs previously associated with this new technology. LED lighting is no longer the costly showpiece of a lighting scheme, it offers real world savings in every application.

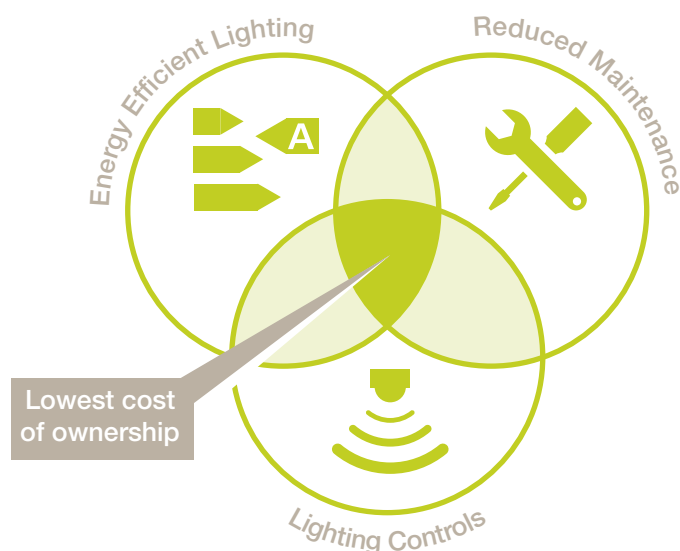


Maintaining the savings

Once a scheme has been installed, it needs to be maintained throughout its life. Our LED solutions have a rated life from 50,000 to 100,000 hours, meaning they are maintenance free for at least 5 years, even in a 24/7 operation. This is compared with 20,000 hours for the best possible fluorescent luminaires. The cost benefits of this lower maintenance schedule are two-fold. Re-lamping is costly in itself, but when you factor in the cost of the disruption and break in productivity within the factory environment, the savings are considerable.



Typical life cycle cost comparison, new LED installation vs traditional existing lighting scheme. 4000m² factory



Staying in control

The most efficient lighting is only used when needed. By utilising technologies such as daylight harvesting and absence detection, lighting controls will ensure that lighting is only used when and where it is needed. During daylight hours, natural light through skylights can contribute hugely to the lit space, meaning that artificial lighting can be dimmed or switched off completely for large parts of the day. In most industrial applications, certain areas of a factory are idle during certain periods. Absence detection can either dim or switch off lighting to these areas as required, reducing wasted energy and therefore cost. In warehouse applications, individual aisles can be controlled so that they are only lit when the workforce is present.

Manufacturing spaces



Maintenance

Luminaire maintenance in manufacturing areas is a large factor in the determination of its cost-effectiveness. Luminaires are mounted at height, making access extremely difficult. This is coupled with the disruptive nature of bringing access equipment into a manufacturing area. Our LED luminaires are designed to be maintenance free for at least 50,000 hours, resulting in far fewer maintenance cycles than traditional light sources.

Product focus

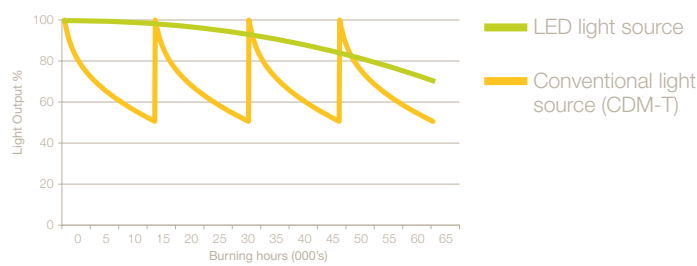
» Aerial LED

The Aerial range of LED luminaires have been designed to maximise comfort. The Hexaprism diffuser optic controls glare from all angles of view, and the luminaire can be mounted from 4 - 10m with an output of up to 28,000 lumens. For areas requiring protection from robust cleaning regimes, an IP65 version is available.

User experience

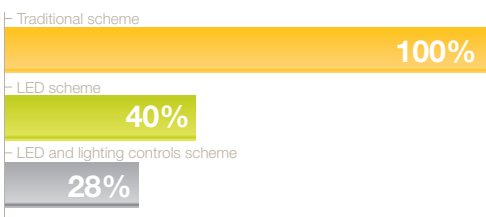
An increase in productivity is the goal of every manufacturing facility. A high quality lighting scheme can aid this goal in many ways. Firstly, having the right level of illumination for a given task helps the workforce to become more effective, and LED lighting will maintain its original lighting level far longer than a traditional scheme. However, good lighting is about more than just the right level of illumination. Glare can be an extremely disabling feature in a poor lighting scheme. Our luminaires use the same advanced optics found in our office products, and are designed to minimise glare and control contrast from all angles of view. These features will facilitate rapid and accurate work.

Lumen maintenance and re-lamping intervals



Energy and sustainability

The use of LED technology can bring savings of up to 60% when compared to traditional HID or fluorescent lighting solutions. Savings can be further increased with the introduction of lighting controls. The primary saving in a manufacturing environment is made by harvesting the natural daylight penetration. Luminaires can be automatically dimmed when daylight is present, meaning that lighting is only used when actually needed. Further savings can be made by using a zonal set-back scheme. This will reduce lighting levels at certain times of operation, when areas are not in use. Presence detection will be used to override this setting, ensuring safety of operation at all times.



Lighting criteria

The regulations governing the lighting of manufacturing spaces are varied depending on the type of work carried out in these spaces. Spaces tend to be over-lit as a result. Our LIA Advanced trained lighting engineers will ensure that the correct level of illumination is designed for every application, resulting in compliant lighting schemes without wasted energy.

Area	Light Level	UGR	Colour Rendering (Ra)	Uniformity
Fabrication-General	300	28	40	0.4
Machine Shops – Medium Bench & Machine Work	300	25	80	0.6
Assembly – Fine Work	500	22	80	0.6
Inspection – Very Fine	750	19	80	0.7



» Harrier

Harrier can be specified with a wide range of light outputs, allowing a wide variety of luminance levels and mounting heights. The curved diffusers deliver excellent glare control and an extremely even distribution of light. A range of integrated lighting controls packages are available for added flexibility.

» Selise High Bay



Selise can be mounted at heights up to 15m, providing excellent all round illumination. It's sealed, IP66 construction ensures maintenance-free operation throughout it's life.

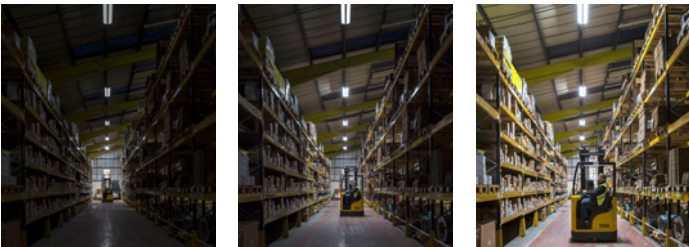
Smart logistics

User experience

Speed of operation is of primary importance in logistics. Good lighting will aid this by creating a clear, well illuminated workplace. Our luminaires have been specifically designed to provide excellent vertical illuminance, lighting the pick faces well. Glare control is important in logistical operations. Workers in high bay areas can be looking upwards towards the light source when picking from pallet racking, so low glare luminaires will increase both comfort and safety. Linear lighting solutions should be used in these areas to minimise glare and maximise uniformity.

Energy and sustainability

The best way to reduce energy is to light the space in the most efficient manner. Simply put, linear spaces should be lit using linear luminaries. This will reduce the number of installed points and ensure that light is not wasted by lighting the tops of racking. LED luminaires will bring huge energy savings to any application. The additional use of lighting controls will bring further savings, with the use of both daylight harvesting and presence detection. In the logistics environment, aisles can be unused for large period of the day, so lighting that is controlled aisle by aisle brings great benefits. Lighting can be switched off when an aisle is unoccupied, and can be brought on instantly when presence is detected.

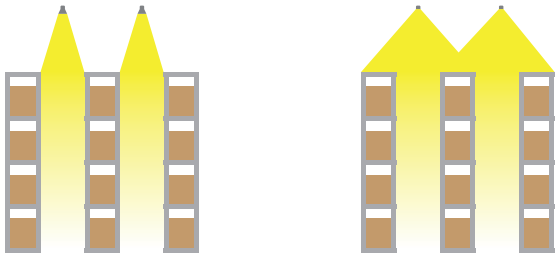


Aerial Logistic senses movement and reacts accordingly

Lighting criteria

CIBSE LG1 sets the standards for both levels of illumination and colour rendering. Whilst the illumination level is easy to achieve, colour rendering can be difficult to meet with some light sources. Our LED luminaires all have a colour rendering index of over 80, which exceeds the regulations and provides an environment conducive to more accurate picking.

Area	Light Level	UGR	Colour Rendering (Ra)	Uniformity
Bulk Stores-(Limited Perception of detail required)	200	25	60	0.6
Racking Areas – Rack Face	200	Vertical Surface	60	0.4
Loading Bays	150	25	40	0.4
Cold Stores	300	25	40	0.4



Asymmetric linear lighting directs light between racking, reducing energy by not illuminating unnecessary areas.



Linear solutions require fewer installed points to light the same space

Product focus

» Aerial Logistic

Aerial Logistic employs a 15° beam angle lens combined with a clear optic to deliver elliptical illumination specifically designed for warehouse lighting. This delivers 40% vertical illuminance, even when mounted at 10m, resulting in well lit pick faces. The 4000K cool white LEDs deliver excellent colour rendition and uniformity. Built in presence detection reduces energy consumption.

Maintenance

As with manufacturing spaces, logistics demands high ceilings. This means that luminaires can be difficult to reach, as well as the maintenance cycle being disruptive to operations. LED luminaires have 50,000 hour maintenance cycles, minimising the costly down time required to access luminaires.



» Harrier High Rack

The Harrier range includes a version specifically designed for High Rack applications. The unique reflector delivers excellent vertical illuminance and visual comfort, whilst the elliptical light distribution maximises spacing for increased efficiency.

Safer outdoor environments



Product focus



» ACL Park

Designed specifically for under canopy applications, ACL Park offers excellent optical uniformity in a robust IP65 body.

A wide range of light outputs mean it is suitable for any application, and the optional integrated detector can increase energy efficiency and reduce energy consumption.



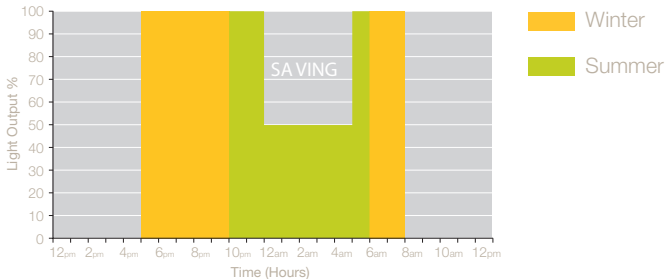
User experience

The primary purpose of any outdoor lighting is to provide safety and security. In working areas such as service yards and loading bays, relatively high levels of illumination are required with good vertical illuminance so that vehicles and pedestrians can co-exist safely. Colour rendition is important as well, as poor rendition results in poorer visibility, regardless of illuminance level. LED lighting provides much better colour rendition than traditional light sources, meaning that lower levels of illuminance can be used safely in these areas. Colour rendition is also important for security, especially where CCTV is employed. Particular attention should be paid to mounting heights and positioning, to ensure glare limits are not exceeded. This is particularly important where vehicle drivers must perceive the movement of vehicles and objects.

Energy and sustainability

The energy benefits of using LED lighting outdoors have long been established. The addition of lighting controls can bring further benefits, with pre-programmed set back functions within luminaires reducing lighting levels after certain periods of time and saving up to 25% extra energy. Presence detection can also be used as both a means of reducing energy consumption and providing extra levels of security.

Dual power savings



Lighting criteria

The need for compliance with the relevant lighting standards is critical in areas where a mix of vehicles, cyclists and pedestrians are present. Close attention should be paid to achieving the correct level of illumination, as well as good uniformity and glare control. Whilst minimum requirements for colour rendering are relatively low, a CRI value of greater than 60 is preferable where colour CCTV is present.

Area	Light Level	UGR	Colour Rendering (Ra)	Uniformity
Service yards-Continuous Handling of large materials	50	50	20	0.4
Loading Bays	150	25	40	0.4
Transit Routes-Regular Traffic	20	45	20	0.4
Security Lighting-Medium Risk	20	50	20	0.4

Maintenance

Outdoor luminaires are typically more costly to maintain than their indoor counterparts. Specialist access equipment is required for many applications, and the weatherproof nature of any outdoor luminaire means that it is more time consuming to open for routine maintenance, cleaning or re-lamping. With LEDs offering up to 5 times the lifespan of traditional light sources, maintenance regimes can be greatly reduced, resulting in significant cost savings.

» Kolo IP65

Kolo offers style and security for building perimeters and security applications. It can be wall or ceiling mounted, and features an integral set-back facility to maximise energy savings.

» Sirocco Park

Sirocco Park can be specified with a range of light outputs and distribution options, resulting in visual harmony across a wide range of outdoor applications. It's unique design ensures no light pollution and is rated to IP66 and IK08 for maximum life.

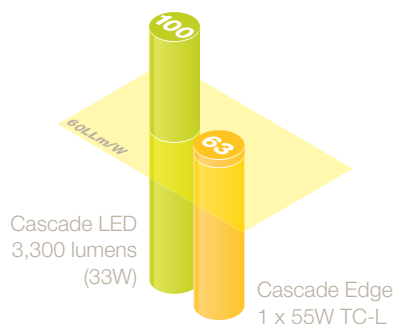
Signature spaces

User experience

Offices and social spaces are the public face of a business. These are the customer-facing areas where creating the right impression is vital. Lighting not only needs to be effective, but also impressive. Different lighting styles can be used to create interest and promote productivity in office areas, and to create more relaxing environments in social spaces. In the office, glare control is extremely important; with widespread use of VDT screens come significant challenges to the lighting design. It is not simply a matter of meeting the standards. Creating a comfortable office environment will result in higher productivity and lower absenteeism. Luminaires such as Cascade LED will exceed the glare regulations and reduce sudden changes in brightness by employing intermediate brightness zones. This further decreases discomfort.

Energy and sustainability

The latest generation of LED technology ensures unparalleled efficiency. Luminaires can now deliver over 100 LLm/W, minimising energy consumption. Area or localised lighting control can further increase the efficiency of a lighting scheme, reducing energy consumption by an additional 40% with a combination of daylight harvesting and absence detection.



Lighting criteria

In offices, with the adoption of Building Regs 2013 Part L, LENI will become an increasingly important method of assessing energy effectiveness of a lighting installation. Our highly efficient office luminaires will comfortably exceed the requirements of these regulations.

Area	Light Level	UGR	Colour Rendering (Ra)	Uniformity
Open Plan Office	500	19	80	0.6
Meeting Room	500	19	80	0.6
Corridor	100	28	40	0.4
Canteen	200	22	80	0.4

Product focus

» Avenue Suspended

Avenue offers unparalleled flexibility for linear lighting in any application. Lines of unbroken LED light trace ceilings and walls, bringing buildings to life.

Maintenance

Whilst office luminaires are easier to maintain than those in production areas, maintenance is still disruptive and costly. Using LED luminaires will minimise maintenance routines and deliver savings throughout the life of any office building.

» Cascade LED

Cascade LED is designed to meet the needs of the whole workplace. Whether in offices or transitory areas, Cascade LED can provide the highest quality lighting coupled with a cohesive aesthetic.

» Echo

Echo integrates perfectly into any environment. Its gently flowing form will complement a wide range of architectural styles and can be used for area or task lighting.



Product selector

Manufacturing

Aerial LED

suspended LED high or low bay luminaire



Optics

- 4000K 'cool' white LEDs
- Ra80 colour rendering index
- 24,800 lumens (215W)
- Hexaprism diffuser for all round glare control

Body

- Aluminium body finished white
- Suitable for mounting heights between 4m and 10m

Logistics

Aerial Logistic

suspended LED high or low bay luminaire



Optics

- 16,570 lumens (132W)
- 15° beam angle lens behind clear optic for elliptical luminance
- 40% of horizontal illuminance on the vertical plane

Body

- Aluminium body finished white
- Recommended high bay mounting heights of between 8m and 15m

Selise High Bay

circular LED highbay luminaire



Optics

- Light output options:
 - 14,000 lumens (135W)
 - 21,000 lumens (202W)
 - 28,000 lumens (270W)
- Wide or narrow beam distribution

Body

- IP66
- Die cast aluminium body
- 4mm thick tempered glass visor resistant to thermal shock and impact
- Suitable for mounting heights above 8m

Harrier High Rack

LED high bay luminaire



Optics

- 7,500 - 10,000 lumens
- Curved opal diffuser
- Elliptical light distribution

Body

- Steel batten finished white
- BESA fixings on body

Harrier

LED batten luminaire



Optics

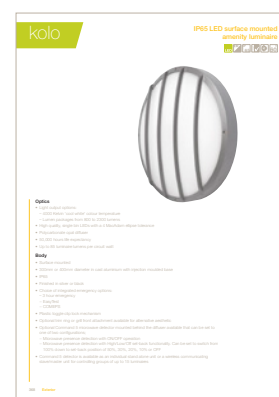
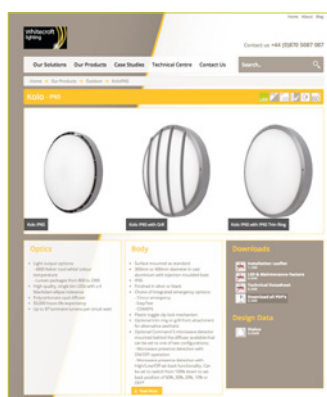
- 2,500 - 10,000 lumens
- Curved opal diffuser
- Choice of reflectors

Body

- Steel batten finished white
- BESA fixings on body

Online resources

For comprehensive product information including technical data please visit our website - www.whitecroftlighting.com Here you will find downloadable product datasheets and installation instructions, as well as design data which can be used in Relux and Dialux lighting design software.



Outdoor

Sirocco Park ultra slim LED lantern



Optics

- Light output options:
 - 3200-10,000 lumens (33.5-104W)
- Wide range of distribution options
- Zero light pollution

Body

- Powder coated for corrosion and saline environment resistance
- IP66 IK08 rated protection

Selise Maxi surface mounted circular LED floodlight



Optics

- Light output between 12,976 - 25,954 lumens
- Asymmetric distribution

Body

- IP66, IK08
- Die cast aluminium body with integrated cooling fins
- 4mm thick tempered glass visor resistant to thermal shock and impact

ACL Park surface LED luminaire for demanding environments



Optics

- 2,500 - 6,800 lumens
- High impact polycarbonate diffuser

Body

- GRP body finished light grey
- IP65
- Stainless steel clips in centre (lockable via screw fixing)

Offices

Cascade LED recessed LED luminaire



Optics

Available with two different optics:

Office – advanced Hexaprism for optimum glare control and diffusion
– For use in offices where LG7 and/or UGR compliance is required

Area – polycarbonate TP(a) micro-polymer diffuser with wipe clean finish

– For use in transitory, social spaces and open areas

Body

- Optional integral lighting control detectors
- Available with or without air-handling

Echo 280 LED LED architectural low bay luminaire



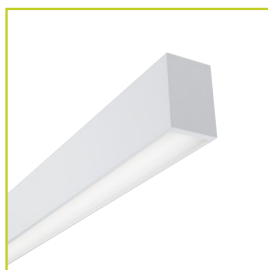
Optics

- Light output options:
 - 1,500 lumens
 - 4,000 lumens
- High quality single bin LEDs
- 50,000 hour life expectancy

Body

- Aluminium housing with integrated extruded aluminium heat sink

Avenue Suspended suspended linear feature LED lighting system



Optics

- Choice of diffusers:
 - opal for general, circulation or feature areas
 - hexaprism for offices and LG7 compliant schemes
- TP(a) rated polycarbonate diffusers

Body

- Continuous or stand alone units
- Supplied with through wiring
- Slim extruded aluminium body finished in white or silver

Lighting, design, controls:
Total Project Solutions

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