Whitecroft lighting

Industrial Lighting

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

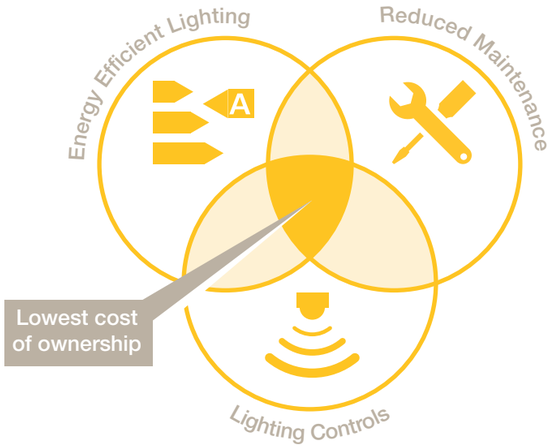
Modern, efficient manufacturing and logistics facilities must provide low energy and low cost working environments. Our solutions not only meet these requirements, but also provide high levels of comfort across the entire workplace.

This results in a reduction in capital cost, energy and operational cost, whilst at the same time increasing efficiency and productivity. Equally applicable to both new build and refurbishment projects, we offer solutions capable of lighting any industrial application regardless of mounting height, with integral emergency and lighting controls if required.

Reducing the total cost of ownership

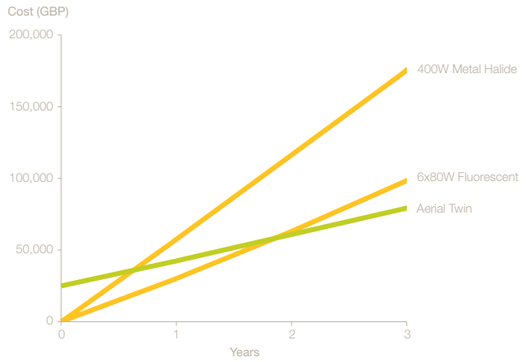
Choosing the right source

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 the 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 to 11 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 showing payback within 2 years

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. These technologies can further reduce energy consumption by up to an additional 40%.

Accreditations

- Carbon Trust Accredited Supplier
- ECA Certificates available
- Society of Light and Lighting, Sustaining Member
- ISO 9001 : 2015
- ISO 14001 : 2004

Whitecroft can assist with scheme evaluations for total cost of ownership and ECA claims.

CARBON TRUST ACCREDITED SUPPLIER

Lighting controls

Once the decision has been made to implement an LED lighting scheme, energy usage can be further reduced by using lighting controls in any industrial area. The choice of controls type is partly environmental, and partly based on the usage of space.

Environmental considerations

The amount of daylight in industrial spaces can vary dramatically. Where there is a suitable amount of daylight penetration into a space, then daylight dimming can be employed. This dims or switches off luminaires when the available light is sufficient to light the space to an acceptable level. This type of control is more suited to open areas such as manufacturing or open storage spaces.

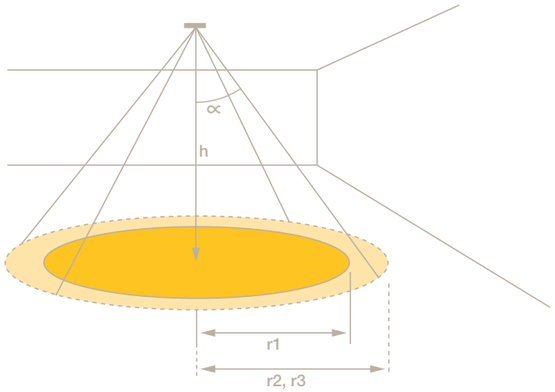
Usage considerations

Lighting controls can also be used to detect and react to movement within a space. This means that an area can be monitored, and lighting switched off or dimmed when no activity is detected, however care should be taken when machinery is in operation. This can dramatically reduce energy usage in areas such as multi-aisle high rack warehousing, where individual aisles can be monitored and switched independently. This means only the aisle in use is illuminated at any given time.

Integrated or remote?

Most of our luminaires can be specified with integral lighting controls. this means that a detector is mounted within the body of the luminaire. To minimise installation time and cost, our Command 8 Wireless system can be integrated, which communicates wirelessly and only requires standard power cables. This can be configured to control a stand-alone luminaire or communicate with a series of luminaries to create a group. For luminaires not suitable for integral controls, remote detectors can be used, with options for use up to 15m mounting heights.

h	r1	∝	r2	∝	r3	∝
5	2.5	25	3	30	3	30
7	3.5	27	4	30	4	30
10	1.5	8	6	30	6	30
13	x	x	7	27	7	27
15	x	x	x	x	8	27



Emergency lighting

The requirement for emergency lighting is defined in BS EN 1838 (2013), which specifies the requirements for emergency escape lighting, to enable safe exit from a location in the event of a failure in the normal supply. In an industrial application, this is essential to protect the workforce in areas that can be especially hazardous, with fast moving machinery and vehicles prevalent.

Self contained or central battery systems

To cater for the possibility of a mains power failure, emergency lighting is essential for every project and can be integrated into luminaires or housed in stand-alone dedicated units. There are advantages in both options and an evaluation should be carried out to determine the optimum solution for the project, based on design compliance and cost of installation and maintenance.

Emergency systems include 3 hour self-contained for simple key switch operation or Dali addressable for remote testing and monitoring, as the COMEPS system. In most cases a Dali inverter can be wired as self-test, eliminating the need for additional wiring yet offering an automated testing regime. Where higher temperatures or difficulty of access exclude the use of integral batteries, various central battery options are possible. The most common of these is a 230V central battery (static inverter) providing mains power from a remotely located battery.

Manufacturing spaces

Key considerations

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.

Due to the potential of high ambient temperatures in manufacturing spaces, particular care should be given to the maximum operating temperature of any luminaire used. If the ambient temperature rises above this point it can reduce both light output and component life. Luminaires should also be of robust construction and be able to withstand vibration from large machinery and the ingress of dust from manufacturing processes.

Maintenance

Luminaire maintenance in manufacturing areas is a large factor in the determination of it's 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.

Lumen maintenance and re-lamping intervals

Lighting criteria

The recommendations for 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

Extracted from SLL Lighting Guide LG1 for Industrial Environments.

Product focus

Aerial LED

The Aerial range of LED luminaires has been designed to maximise comfort. The Hexaprism diffuser optic controls glare from all angles of view and the luminaire can be mounted from 8 - 20m with an output of up to 50,000 lumens. For areas requiring a higher degree of protection an IP65 version is available.

Harrier

Harrier can be specified with a wide range of light outputs and 3 distribution patterns, allowing a wide variety of illuminance 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. Its sealed, IP66 construction and wide ambient temperature range suit more arduous environments.

Logistics – High racking

Key considerations

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. Linear lighting solutions should be used in these areas to minimise the number of installed points and maximise uniformity.

Lighting criteria

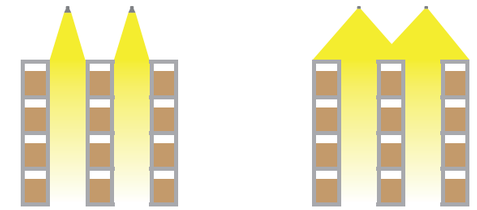
In high rack areas, SLL LG1 sets the standards for levels of illumination. Particular attention must be paid to vertical illuminance levels as indicated in the table below.

Area	Light Level	UGR	Colour Rendering (Ra)	Uniformity
Racking Areas – Rack Face	200	Vertical Surface	60	0.4

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.

Command 8 Wireless senses movement and reacts accordingly



Narrow beam distribution directs light between racking, reducing energy by not illuminating unnecessary areas.

Linear solutions require fewer installed points to light the same space than point source solutions

Product focus

Aerial Industry High Rack

Aerial Industry High Rack employs a 15° beam angle lens combined with a clear optic to deliver elliptical illumination specifically designed for warehouse lighting. This delivers good vertical illuminance, even when mounted at 15m, resulting in well lit pick faces. Built in Command 8 Wireless reduces energy consumption.

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.

Selise High Bay Elliptical

Selise can be mounted at heights up to 15m, providing excellent illumination for high racks. It's sealed, IP66 construction and wide ambient temperature range suit more arduous environments.

Logistics – Open areas

Key considerations

When lighting open storage areas it is important to remember that all of the space can be used in a variety of ways, and access can be from any direction. This means that an even illumination must be achieved throughout the space. Whilst goods are not typically stored in racking, shelving can be prevalent and vertical illuminance is just as important as horizontal illuminance in these areas. For general storage luminaires rated to IP40 are suitable, but in areas used for food and beverage storage high IP ratings, such as IP65, should be considered. Added to this these areas may be subject to low temperatures so luminaires with a wide temperature operating range should be considered.

Lighting criteria

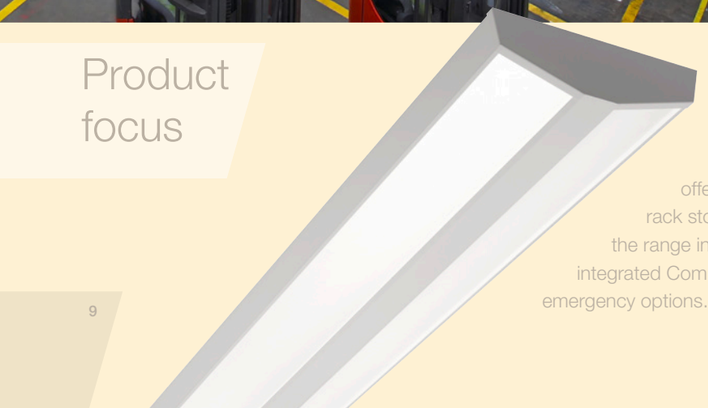
SLL LG1 sets the standards for both levels of illumination and colour rendering. Whilst the illumination level is easy to achieve, colour rendering can be difficult to meet with some light sources.
Most of our LED luminaires all have a colour rendering index of over 80, which exceeds the regulations and provides and 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
Loading Bays	150	25	40	0.4
Cold Stores	300	25	40	0.4

Maintenance

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

Product focus



Aerial Industry

Retaining the classic form of the best-selling Aerial Twin, the new steel bodied Aerial Industry offers a cost effective solution for open and high rack storage areas. With 3 distribution patterns, the range includes Fixed Output, Dali dimming, integrated Command 8 Wireless and integral emergency options.

ACL Industry

Suitable for lower mounting heights, ACL Industry is extremely efficient and delivers a wide distribution of light. IP66 rating and corrosion resistance make it suitable for most environments

Powerbay

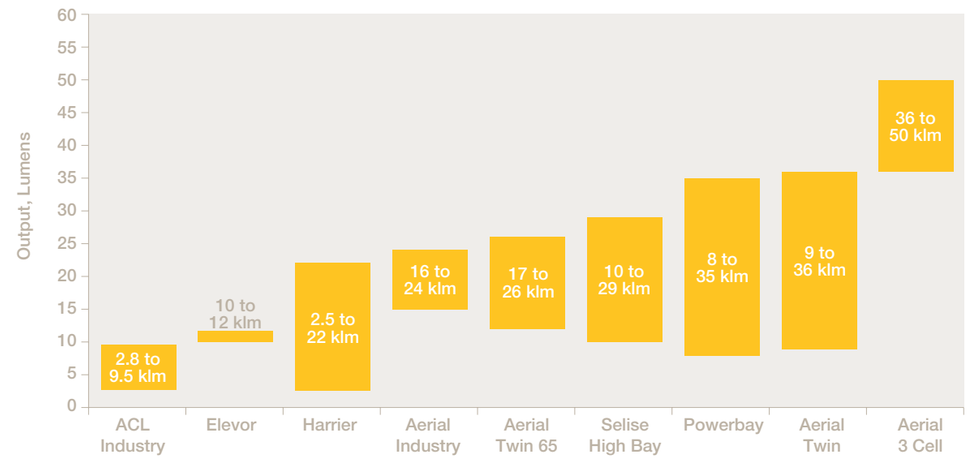
As an ideal replacement for existing highbays, Powerbay has a die-cast aluminium body with a hook for single point suspension. Wide or medium distribution options enable good uniformity at medium to high mounting levels and an optional refractor offers a decorative solution when required.

Industrial product matrix

						Distribution Patterns							
Range		Driver	Max Efficacy (LL/CW)	Output Range (lumens)	Mounting Heights (m)	Wide	Medium	Narrow / Racking	Min Life to L80	Ambient Temp °C	Emergency	Controls	IP Rating
Aerial Industry		Fixed with Dali option	141	16000 - 23000	6 - 15	Yes	Yes	Yes	50k	0 to 35 (Em 0 to 30)	Integral	Integral Command 8 Wireless	IP40
Aerial Twin		Dali standard	150	8900 - 36000	4 - 18	Yes	Yes	No	100k	-20 to 40 (Em 0 to 30)	Integral	Integral Command 8 Wireless	IP40
Aerial Twin 65		Dali standard	126	17000 - 26000	6 - 15	Yes	Yes	Yes	68k	-20 to 40 (Em 0 to 30)	Integral	Integral Command 7	IP65
Aerial LED 3 Cell		Dali standard	127	36000 - 50000	8 - 20	No	Yes	No	61k	-20 to 40	Remote Florin	Integral Command 8 Wireless	IP40
ACL Industry		Fixed with Dali option	164	2800 - 9500	3 - 6	Yes	No	No	100k	-20 to 25 (Em -5 to 25)	Integral	Integral Command 5	IP66
Harrier		Fixed with Dali option	123	2500 - 22000	3 - 15	Yes	Yes	Yes	50k	0 to 25 (Em 0 to 25)	Integral	Integral Command 5 & 8 Wireless	IP20
Selise High Bay		Fixed with Dali option	111	10000 - 29000	6 - 20	Yes	Yes	Yes	80k	-40 to 40	Remote Florin	Remote Command Evo	IP66
Elevor		Fixed with Dali option	91	10000 - 12000	5 - 8	Yes	No	No	50k	-20 to 30	Remote Florin	Remote Command Evo	IP65
Powerbay		Dali standard	146	8800 - 20000	6 - 15	Yes	Yes	No	50k	-20 to 40 (Em 0 to 30)	Integral	Remote Command Evo	IP40

See the ‘Product Selector’ on the following pages for brief details of each range.
Refer to our website for latest detials.

Luminaire output guide



Product selector

Linear form for surface, trunking or suspended mounting:

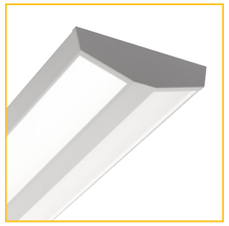
Aerial Family

Aerial Industry

Optics
- 16,000 – 23,000 lumens (113 – 179W)
- Efficacy over 120 LL/CW
- 50,000 hours life to L80B50
- Wide, medium and high rack distribution patterns

Body
- Fabricated steel body, finished white
- IP40 rated
- Fixed output or Dali drivers
- Fitted plug and socket for ease of installation

Aerial Twin



Optics
- 9,000 – 36,000 lumens (71 – 282W)
- Efficacy up to 150 LL/CW
- Up to 100,000 hours life to L80B50
- Wide and medium distribution patterns

Body
- Extruded aluminium body, finished white
- IP40 rated
- Dali drivers as standard
- Fitted plug and socket for ease of installation

Aerial LED (3 cell)

Optics
- 36,000 – 50,000 lumens (289 – 430W)
- Efficacy over 120 LL/CW
- Up to 97,000 hours life to L70B50
- Medium distribution pattern for high level mounting

Body
- Extruded aluminium body, finished white
- IP40 rated
- Dali drivers as standard
- Fitted plug and socket for ease of installation

Aerial Twin 65

Optics
- 17,000 – 26,000 lumens (163 – 206W)
- Efficacy up to 126 LL/CW
- 100,000 hours life to L70B50
- Wide, medium and high rack distribution patterns

Body
- Extruded aluminium body, finished white
- IP65 rated
- Dali drivers as standard
- Fitted plug and socket for ease of installation

ACL Industry

Optics
- 2800 – 9500 lumens (19 – 69W)
- Efficacy up to 164 LL/CW
- Over 100,000 hours life to L80B50
- Wide distribution for lower mounting heights

Body
- GRP body with polycarbonate diffuser
- IP66 rated
- Integral controls options

Harrier

Optics
- 2,500 – 22,000 lumens (22 – 204W)
- Efficacy up to 123 LL/CW
- 50,000 hours life to L80B50
- Opal polycarbonate diffuser for glare control
- Wide, medium and high rack distribution patterns

Body
- Fabricated steel body, finished white
- BESA fixings for versatile mounting options

Circular form for single point suspension:

Selise High Bay

Optics
- 10,000 – 29,000 lumens (101 – 270W)
- Efficacy over 100 LL/CW
- 80,000 hours life to L70B50
- Wide, medium and high rack distribution patterns

Body
- Die cast aluminium body with single suspension point
- IP66 rated
- Glass or polycarbonate diffuser options
- Suitable for ambient temperatures between -40 to +40°C

Elevor

Optics
- 10,000 - 12,000 lumens (133W)
- 4000 Ra80 or 5000K Ra70 LEDs
- 50,000 hours life to L70B50
- Medium beam distribution

Body
- Classic highbay appearance with aluminium reflector
- Die cast aluminium body with single suspension point
- IP65 rated

Powerbay

Optics
- 8,800 – 20,000 lumens (70 – 154W)
- Efficacy up to 146 LL/CW
- 50,000 hours life to L70B50
- Wide and medium beam open lens
- Optional decorative refractor

Body
- Die cast aluminium body with single suspension point
- IP40 rated
- Integral emergency options

Common features for all ranges include:

- 4000k LEDs
- Ra>80
- MacAdam 3 SDCM
- Integral control options for all linear ranges

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.

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