GE
Lighting

WORLDWIDE PARTNER

Breakthrough lighting solutions

AN EXCITING FUTURE WITH GE LIGHTING

GE imagination at work

ecomagination℠

BREAKTHROUGH SOLUTIONS:
AN EXCITING FUTURE WITH GE LIGHTING

GE imagination at work

Introduction

GE Lighting's technology road map has been driven by customer demand and our ecomagination philosophy. We take an innovative idea and create a high quality, reliable lighting solution to improve industry standards and meet a global demand for improved performance and environmental responsibility.

GE Lighting continues to build close relationships with customers to inspire ideas for new innovations, ensuring we are always at the forefront of design.

Our Ecomagination[sm]

The future can seem pretty intimidating: by 2045 our known reserves of oil and natural gas are forecast to be depleted. The climate is changing and more than a billion people lack clean water.

At GE Lighting, we believe some of the world's most pressing challenges present an opportunity to do what we do best: imagine and build innovative solutions that benefit our customers and society at large.

Our customers want a more prosperous and cleaner future and so do we. By harnessing renewable resources and the imagination of our people - we can create that future with them. We are taking a new global approach, bringing new technologies to the market to help solve the world's toughest environmental challenges. We call it: ecomagination[sm] and it exists in all we do.

Our philosophy: imagination at work

With a heritage spanning more than 130 years, GE Lighting has always been a company that stands for progress. Our imagination at work approach is about people, their curiosity, relentless drive, hard work and willingness to take risks – combined with a foundation of limitless imagination – that makes anything possible.

It is a legacy of progress that began with our founder, Thomas Edison, and one that will continue through the 21st century. At GE Lighting, what we imagine, we can make happen.

This philosophy began with the invention of the world's first affordable incandescent lamp and continues over a century later. GE Lighting is still developing breakthrough lighting technologies that operate with more efficiency, less cost and less environmental impact than ever before.

Leading the future of LEDs

GE Lighting was the original inventor of the first visible LED in 1962 and is an innovation market leader in LEDs for a variety of applications such as traffic and rail signals, signage, and refrigerated display lighting.

The company also has a strong presence in the following applications:

- Retail lighting
- Architectural lighting
- Outdoor Lighting
- LED retrofits for both home and professional lighting
- Commercial display lighting

As a Worldwide Partner of the Olympic Games, GE Lighting is the exclusive provider of a wide range of innovative products and services that were integral to create a successful environment for the Games.

As part of a European Union city initiative to incorporate sustainable energy into cities and cut CO_2 emissions 20 percent by 2020, Motril, Spain, partnered with GE Lighting to transform their lighting an energy efficient system, while preserving its Spanish history and design.

Acknowledging Success

GE Lighting is leading the way with innovative lighting technology all over the world and in all areas of the environment.

Globally, GE Lighting has sold more than 750 thousand metres of LED refrigerated display case lights, more than 5 million LED traffic signals and more than 5.5 million metres of Tetra® LED lighting systems for use in signage and architectural applications.

In the United States, GE Lighting has an extensive portfolio of installations that incorporate its white LED systems. These include Walmart's refrigerated display case lighting installation, the world's largest installed base of white LEDs replacing fluorescent lighting in a retail display setting.

In Motril, Dunkerque, Verona and Budapest GE Lighting has received the distinction of Benchmark of Excellence for exterior lighting schemes that successfully employ GE Lighting energy efficient solutions to reduce energy and carbon emissions.

No matter where in the world or what type of application, GE Lighting can provide a successful lighting solution.

Acknowledging Quality

GE Lighting has a deep commitment to lighting technology innovation and delivering quality and GE Lighting's strong LED credentials have been recognised by several prestigious awards.

In the 2009 competition, GE Lighting received a "best-in-class" distinction from the LED Next Generation Luminaires™ Solid State Lighting for GE's LED Road Street Lighting System. Four other GE LED products were named as recognized winners, as well.

GE Lighting's Vio® High-Power White LED technology also achieved the top prize in the "light sources and controls category" at the UK Lighting Design Awards 2009, with judges highlighting Vio technology as 'a major advance in colour stability'.

Design Competition for the LED Display Case Lighting System and a "special recognition" from the same awarding body for the GE LED Cove Lighting System. This competition was sponsored by the International Association of Lighting Designers (IALD), the US Department of Energy, and the Illuminating Engineering Society of North America (IESNA).

In addition to the numerous LED innovation awards, GE Lighting recently received two awards in recognition of leadership in sustainability and climate change: the Global 100 World's Most Sustainable Company award and number one ranking in the U.S. on Maplecroft's Climate Innovation Index.

With proven success, GE Lighting has also received the distinction Benchmark of Excellence from the European Commission for exterior lighting schemes across Europe including Motril, Dunkerque, Verona and Budapest that successfully employ GE Lighting energy efficient solutions to reduce energy and carbon emissions.

Our Heritage, Our Future

The success, quality and reliability of our products are recognised worldwide as is the contribution that we can make to a sustainable future. We believe that improved technology is the answer to environmental challenges.

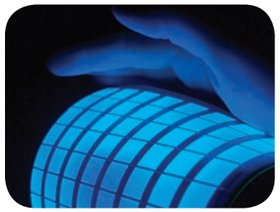
At GE Lighting we are confident we can find the solutions to these challenges just as we have since the days of Thomas Edison. Throughout our history, we have invented lighting products to meet even the most complex or unique requirements of our customers.

At GE Lighting we have long pioneered advanced technologies with higher efficiency, reduced maintenance costs and less environmental impact. Our knowledge and technical expertise from more than 130 years in lighting provide the foundation for continuing breakthrough technology and future innovation.

OLEDs

The future of lighting

OLEDs provide the perfect balance between art and function that appeal to our senses, our creativity, and environment. OLEDs have the potential to deliver dramatically improved levels of efficiency and environmental performance, while achieving the high quality of illumination found in the traditional LED products marketplace today. Applying light to literally any surface at a thickness of just a few sheets of paper, OLEDs clearly represent the future of lighting.



Ultra thin and flexible

OLEDs are thin, flexible organic materials sandwiched between two electrodes, which illuminate when an electrical charge is applied. Soon to be available in 28 to 30 lumens per watt and 75mm X 150mm panels of light, GE OLEDs will be produced in a roll-to-roll manufacturing process similar to newspaper printing. A roll-to-roll manufacturing infrastructure that enables high performance and low cost devices will allow a more widespread adoption of GE's OLEDs when commercialization of the product starts in 2011.

Infusion LED

General lighting with energy efficient long-lasting LEDs in directional applications such as recessed downlights, tracks, pendants and sconces becomes as easy as changing a standard light bulb. A new technology "twist" from GE Lighting—a small puck-shaped Infusion that gives lighting designers and end-users the ability to easily upgrade LED lighting as technology advances—addresses the inflexibility of integrated LED luminaires now used in commercial and consumer settings.

The new module's one-of-a-kind ease of installation, a clockwise twist motion, contrasts sharply with current integrated LED luminaires and LED modules that are not easily replaceable because they require mechanical fasteners to couple the LED package to a heat sink, and a plug to make the electrical connection. With the new GE offering, the necessary thermal and electrical connections are made with a simple twist of the module into its socket.

- Electrical, mechanical and thermal interface connection in one simple twist
- Lumen roadmap from 400 to 3000 lumens
- Choice of three colour temperatures: 2700K, 3000K, 4000K
- Choice of three beam angles (15, 25, 36 degrees) with excellent optical precision
- Versions with standardized optical interface connection in development

VIO LED MR16 Module

GE's award winning Vio™ LED technology is now available in an easy to use modular format that can be used in place of a 50mm halogen MR16 lamp, offering excellent quality of light and substantial energy saving possibilities.

Vio

winner
THE LIGHTING DESIGN AWARDS 2009

Product features:

- Replaces MR16 lamps in recessed downlight and spotlighting applications
- 3.6 Watts for optimised energy saving (7.2W soon available)
- Runs from 350mA constant current DC supply – compatible with range of LED drivers
- Dimensions smaller than MR16 lamp – same diameter, shallower depth
- Vio quality and stability of light – only available from GE
- 50,000 hour L70 lifetime
- High colour rendering index option
- Choice of three colour temperatures
- Attractive 'faceted reflector' appearance similar to halogen

Retrofit LED Reflector Lamps

GE's LED retrofit reflector lamp solutions offer substantial opportunities to reduce energy consumption and maintenance costs in applications where directional, high quality light is required. The lamps offer low cost of ownership, and paybacks of less than 1 year are achievable in professional applications.

Range is expanded for 2010 and includes the following NEW products:

- GU10 35W halogen equivalent performance with 200 beam lumens in standard halogen size
- GU10-XO – 50W halogen equivalent performance with 300 beam lumens
- R63 dimmable with enhanced output
- PAR30

Refrigerator Display

Immersion™ LED Display Lighting from GE is continuing to change the way people look at refrigerated cases with the new RV30 series.

Product features:

- Available in **multiple colour temperatures** and **multiple lengths**
- **Distributes light more evenly** into cases & **eliminates distracting glares**
- **Energy efficient** – up to 60% energy savings vs Fluorescent
- Significantly **reduces maintenance costs** with ongoing performance in cold environments
- Fast **payback**
- Long life of up to **50,000 hours** - backed by a **5-year** limited **warranty**
- **Environmentally** responsible: Reduce energy use, CO_2 emissions & material waste

Retail Display Case

LED Display Case Lighting System distributes brilliant and uniform light throughout glass cases, combined with the added benefits of long life, worry-free maintenance and the reliability of GE. This unique solution increases considerably sparkle effects and allows significant energy savings compared to Fluorescent tubes and Halogen lamps.

NGL2008

Best in Class Next Generation Luminaires

Product features:

- Unique reflector optics which distribute light more evenly throughout the case.
- Improved average case illuminance
- Sizes that increase in small increments, enabling a closer edge-to edge fit
- Reduced shadows within the case that can disrupt uniformity
- Choice of colour temperatures, allowing you to select the perfect light to showcase your display
- Sleek anodized aluminium finish that can be used with or without an extrusion
- A variety of mounting clips which are compatible with several installation methods
- Low-voltage 12VDC design that reduces complex wiring and simplifies installation – saving time and labour expenses

CMH Ultra

GE's ConstantColor™ CMH Ultra 35W and 70W lamps have been specifically created with retail environments in mind. This means significantly improved lumen maintenance and enhanced quality of light - while still retaining GE's market leading long life of up to 15,000 hours. CMH Ultra is a clear choice when specifying new stores but they can also be used as a direct replacement for lamps in existing CMH fittings, with no restriction of burning position.

Colour quality

GE CMH Ultra lamps provide the superior colour rendering and consistent colour uniformity. Furthermore, Ultra lamps exhibit minimal lamp-to-lamp colour variation ensuring consistency throughout the store. 20W CMH range in G8.5, G12, GU6.5 and MR16 formats will be made available in 2010 with outstanding lumen maintenance and color quality while keeping long life of 12,000 hours and great efficiency.

Product features:

- 35W and 70W 3000K CMH lamps in G12 and G8.5 formats
- Excellent CRI performance
- Superior lumen maintenance with increased light output which means 33% more lumens versus the standard CMH at average life
- 930 colour gives a true representation of all colours in the spectrum and right ambience
- 70W Ultra can be operated both on electronic and electromagnetic ballasts, 35W Ultra on electronic ballast as per GE's published approved ballast list
- Flexibility with universal burning position for both wattages

CMH Miniature range: 35W SuperMini and 35W MR16 in Ultra version

Energy saving is not only a cost saving but is also a social responsibility and the lighting industry is constantly researching products that produce more light using less electricity. GE is at the forefront of this research and the company's CMH Supermini range is exceptionally efficient. Coupled with an efficient spotlight fixture, Superminis yield significant energy saving because they generate extremely high luminous flux in a very small space. In the retail environment, in particular, this provides great savings with no loss of lighting quality.

Product features:

- Outstanding efficiency - four times better than halogen
- Outstanding long life – market leading 12,000hrs
- Stable colour throughout lamp life , lamp to lamp consistency
- Superior lumen maintenance with increased light output, 90% at mean lumens
- 930 colour gives a true representation of all colours in the spectrum and right ambience
- Efficient optical design

eHID CMH ballast range:

GE will introduce brand new 20W and 35W electronic ballasts in 2010 - integral and remote versions.

These electronic ballasts are designed to allow optimal performance of the GE CMH lamps, offering reduced power consumption, regulated power through life, and more stable lamp operation compared to electromagnetic systems.

Product features :

- High power factor: 0.95
- Same size miniature design for both 20 and 35W
- Full range of integral and remote types offering system packages
- 5 year warranty

GE's Watt-Miser™ range

T5 Watt-Miser™

The T5 Watt-Miser™ uses 5 percent less energy than GE T5 LongLast™, yet delivers the same lumen output. When total system efficiency is taken into account, the energy saving can be as high as 45 percent against standard T8 tubes. As electricity costs account for over 90 percent of total lighting costs, these savings have a big impact on reducing electricity expenses.
The super-slim T5 design reduces waste disposal impacting the environment as well as CO_2 emissions.

Product features:

- 5% extra energy saving **with existing fittings and control gear** – reduced energy consumption with current controlled ballasts, additional light with constant power ballasts
- Reduced CO_2 **and other greenhouse gas emissions**
- **No loss of light output**
- **Excellent** lumen maintenance
- Low mercury content
- ROHS compliant. **Contains recyclable components**

T8 Watt-Miser™

Available for any T8 indoor application, T8 Watt-Miser™ is the ideal upgrade for offices, schools, colleges, public buildings, warehouses, industrial buildings, hypermarkets and supermarkets. It offers the potential for savings of up to 10 percent on running costs, with rapid payback times typically less than a year. There are equivalent benefits in carbon emissions.

Product features:

- Consumes up to 10% less energy than as standard T8 lamps
- Uses existing fittings and control gear - reduced energy consumption with current controlled ballasts, additional light with constant power ballasts
- Excellent colour quality – Ra 85
- Exceptional lumen maintenance
- Product life 23,000 hours on 12 hour cycle on electronic ballast
- Significantly reduced CO_2 emission (0.5kg/kWh)
- Typical payback in less than a year

2D Watt-Miser™

The 2D™ Watt-Miser™ lamps are energy saving compact fluorescent tubes, formed into a '2D' shape. Available in either 16W, 21W, 28W, or 38W versions, in a wide choice of colour temperatures. These lamps are a direct replacement for existing 2D™ lamps, delivering market leading life, with excellent energy saving performance that is unique to GE. 2D™ Watt-Miser™ lamps provide similar lumen output as standard 2D™ lamps, with an energy saving of up to 12% dependent upon ballast and wattage.

Product features:

- Up to 18,000 hour life time
- Reduced energy consumption
- The only 'A' Class energy rated 2D™ lamp
- Maintains market leading lumen maintenance
- Retrofit products for existing fittings and ballasts
- 2 and 4 pin versions

Halogen MR16

The GE halogen IR (infrared) range of low voltage reflector lamps provide up to 43% energy savings over conventional MR16 lamps and – with the addition of the patented GE reflector coating technology – unparalleled colour rendering throughout life. Available in two versions, the high performance MR16 ConstantColor™ IR offers low energy use, superior lumen and color maintenance, while the standard MR16 IR delivers savings using a regular dichroic reflector.

Product features:

- Constant, dependable light output
- 5,000 hours life
- Eliminates backlight
- Long-term reliability
- Precise optical control
- Close to 90% lumen maintenance
- Evenly lit surfaces

Please also see Tetra® LED range in Architectural section for further retail solutions.

LED GLS Lamp

The new LED lamp from GE—the world's first true 40W equivalent LED bulb—consumes just 9 watts, provides an 80-percent energy savings and produces virtually the same light output of a 40-watt incandescent bulb while lasting at least 25 times as long.

Product features:

- Consumes just 9 watts—compared with 40-watt incandescent
- Multi-directional light output
- Rated 25,000-hour life—lasts 25 times longer than a general service 40-watt incandescent
- LED technology delivers the instant full brightness of an incandescent or halogen bulb
- Durable solid-state design with no filament to break
- Contains no mercury
- Feels cooler to the touch than CFLs and far cooler than incandescent bulbs

CFL – Energy Smart

At last, the new energy saving lamp that everyone's been waiting for GE Energy Smart™ provides the perfect combination of classic bulb shape with energy-saving CFL. This premium glass product is only available from GE.

Product features:

- 40-100W incandescent equivalent
- 9, 11, 15, 20W
- Instant start
- Fast warm-up (9, 11W)
- Best lumen output in its class
- Mercury content less than 1mg
- No plastic housing

CFL LongLast Spiral

Product features:

- Attractive reduced size spirals, replacing the T3 Stick Extra Mini range
- 15,000 hours premium long lifetime
- A Energy rating
- 20,000 high switching endurance
- Reduced mercury content
- Fast warm-up (<30sec)
- Ecolabel certified quality lamp
- EUP compliant packaging + open bottom box for cap visibility
- Full Range: 8,12,15,20,23W / E14, E27, B22 / 2700, 4000, 6500 kelvin

Also available a new T3 20W dimmable spiral with outstanding dimming performance.

Decor LEDs – Aline GLS, Candle, Spherical, Globe

GE's LED Decor range delivers incandescent-like sparkling and diffuse light effects, making them ideal for general and decorative lighting in home and hospitality applications. Available in clear and frosted finishes, the range encompasses candle, spherical, globe and miniature GLS shapes that can fit all existing fixtures with E14, E27 and B22 sockets.

Product features:

- Long life - 12,000hours
- Mercury free
- Up to 80 lumens
- Clear and frosted types
- 2900K

Decor Halogen

GE's Energy Efficient Halogen (EEH) range is a direct replacement for regular incandescent lamps offering a crisp white light with 30% energy saving and similar lumens. Available in standard GLS, candle, spherical and reflector shapes, GE EEH lamps are the environmentally friendly solution for those who prefer the features and light quality associated with incandescent bulbs.

Product features:

- Last twice as long and consume 30% less electricity than corresponding incandescent lamps.
- Provide instant-on, full light output at start-up and lumens are maintained throughout the life of the product.
- Unlike some compact fluorescent products, EEH lamps are 100% retrofit with the incandescent lamps they replace.
- Can be used with dimming switches.
- Environmentally friendly with no lead or mercury.

Architectural
Solutions

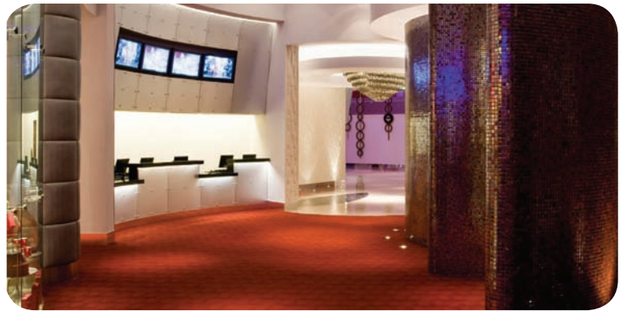
TETRA® PowerGrid

Tetra® PowerGrid is a modular, long-life and energy efficient LED system replacing fluorescent for applications that require broad and uniform lighting.

With several modules assembled on a robust strip, this GE solution allows high-performance and steady illumination to emphasize various backlit areas.
Ideal for backlighting walls, ceilings and under cabinets.

TETRA® Contour

Tetra® Contour is comprised of a flexible LED light engine and a rigid, optically diffused light guide that can be heat formed to fit a wide variety of architectural needs. With multiple colours to choose from, designers can mix-n-match components to create bold designs and attractive accent lighting without the typical worries of working with fragile neon glass.
Ideal for border lighting, interior art, cove and accent lighting applications.



TETRA® MiniMAX

Tetra® miniMAX is a low profile LED system that combines high-brightness with OptiLens™, a patent-pending optical lens that distributes brilliant and uniform light in a wide 155 degree angle. Therefore this unique system delivers a huge visual punch in small or shallow spaces. With several modules assembled on a flexible string, designers can fulfil a large number of architectural needs.
Ideal for cove, indirect and accent lighting applications.

Tetra® range overview

- High light levels
- Outstanding energy savings
- Choice of 6 highly stable white colour temperatures from 2700K to 6500K
- Excellent light quality
- Large viewing angles (up to 155°)
- Impact resistant: robust & overmolded design
- Easy to install & easy to handle
- Low voltage systems
- Contains no lead, mercury or glass - RoHS compliant
- Long rated life of 50,000 hours
- Available in multiple LED colours (Contour and Minimax)

TETRA® AL10

Combining an industry-leading CRI of 93 with excellent energy efficiency of 47LPW and 50,000 hours rated life, Tetra® AL10 is an ideal lighting solution to show off fashion, cosmetics and other retail shelf displays, as well as providing low cost of ownership in many other indoor and architectural applications.

Product features for Tetra® AL10:

- Slimline and low weight
- Exceptional CRI of 93
- Choice of 3 colour temperatures
- High light levels and efficacy
- Low energy consumption of only 15 watts per metre
- 2 fixture lengths & 2 body colours that can be combined
- Choice of 4 optical distributions
- Long rated life of 50,000 hours
- IP54 solution

LED Cove Lighting

The GE LED Cove system eases the financial and maintenance burden of continuously running architectural cove lighting in casinos, hotels, resorts, commercial retail settings and extended operation in residential applications. Integral electronics allows hassle-free installation with no need for a remote power supply. LED Cove delivers high quality at outstanding efficiency - up to 49 lumens /watt- and provides ongoing performance throughout its long life (50,000hrs rated). Low energy consumption generates significant energy savings compared to other lighting technologies.

Outdoor
Solutions

LED Road

The new LED Road luminaire features an advanced LED optical system that provides improved horizontal and vertical uniformity, reduced glare and improved lighting control compared with traditional metal halide lighting systems. It provides a 15 to 30 percent reduction in system energy consumption and an estimated service life of more than 10 years (50,000-hour rated life), reducing maintenance frequency and need.

NGL2009

Best in Class
Street/Roadway

Product features:

- **High efficiency** to meet rigorous photometric requirements
- System rating **50,000 hours** to reduce maintenance
- **White light** with desirable colour temperature 5700K and 4000K with CRI 70 for visual comfort
- **Remote monitoring and control** enabled

Iberia LED

With a wide range of different options, Iberia LED is a versatile luminaire suitable for architectural and urban environments.

Product features:

- Long life **50,000 hours L85** to reduce maintenance
- Contemporary luminaire design
- **3 different light distributions** for improved light control
- **White light** (4100 & 5700K CRI 70) for visual comfort
- **Reduced wattage** to save energy (up to 60%)
- Wide range of **finishes and mounting options**

LED Area Lighter

A **futuristic and aesthetic** luminaire, combining strength, reliability and incorporating all the features of a new generation of luminaires.

Product features:

- **High uniformity** for better visual comfort
- **Excellent vertical light distribution** for facial recognition and security
- Advanced light control for **improved efficiency**
- System rating **50,000 hours L85** to reduce maintenance
- **White light** (5700K CRI 70) for visual comfort
- **Three different lighting distributions** with different system consumption

Tunnel LED

Tunnel LED Luminaire is specifically designed for lighting tunnels and underpasses. This new LED luminaire helps to create a safe environment for traffic with white light for improved visibility and comfort - as well as an outstanding six years / 24 hours a day operation from the same light source.

Product features:

- Better **uniformity** on the ground
- **Three optical options:** Symmetric & Asymmetric distributions
- **White light** (5700K CRI 70)
- **Low power density** (W/m2) and **long life** resulting in reduced maintenance = excellent payback
- For **ceiling and side wall** mounted
- **Dimming** compatible

Floodlight LED

Floodlight LED has been developed to meet a variety of lighting needs across three different applications: architectural, floodlighting and signage. An extremely flexible and versatile LED solution, this new launch from GE Lighting ensures an excellent quality of light - targeted where required - and a long system life of 50,000 hours.

Product features:

- 5 different lighting distributions
- 3000, 4000, 6000K colour temperatures
- 50,000 hour life time
- 95W maximum system consumption

Duna LED

Coming soon another exciting outdoor LED product.

StreetWise

CMH StreetWise lamps

GE's new range for street lighting expand offerings in new installations with high efficiency, safe and comfortable lights. The new range gives reliability, excellent lumen maintenance and longer life (16,000 hrs) for extended relamp cycles. The lamps are with standard base, can be dimmed and operated both from electronic and electromagnetic ballasts.
Streetwise efficiency is outperforming most available HID lamps available in the market , while cost of life is the most preferential.
Very high efficiency CMH range for outdoor application to offer best white light alternative for Mercury, HPS and Standard CMH solutions.

Product features:

- Wide range: 50 / 70 / 100 / 150W
- Same size and LCL as current HPS
- Retrofit to existing fixtures or optics
- Dimmable to achieve further energy saving
- Standard base for simplicity E27/E40
- System flexibility: operates on both Electronic and Electromagnetic ballasts
- Horizontal burning position
- Lowest cost new system: standard base, ballast & optics

StreetWise fully optimised optics

Odyssey fixture is an innovative luminaire for street lighting and spaces where the lighting level requirements are demanding. Odyssey has a high photometric performance thanks to the optimum design of the reflectors, and furthermore it has double protection IP 66 which minimizes the maintenance cost and extends working life for electrical and optics.
With the new specific optic designed to optimize the StreetWise performance, results for any streetlight application will improve through increased pole spacing and lower installation cost.

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