ERCO

Light in the outdoor area

Design
Lighting technology
Practical planning

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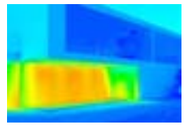
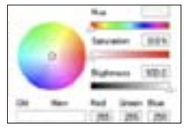


Thinking in light qualities is one of the fundamental aspects required in the development and communication of successful lighting concepts for outdoor areas. A qualitative lighting design concept must be structured to include ambient luminescence, focal glow, and play of brilliants. A further element which is crucial for the perception of outdoor space and is central in ERCO's concept of efficient visual comfort is the illumination of vertical surfaces.



This term concisely describes our conceptual approach: lighting tools that give the lighting designer and user new possibilities to affect the lighting, allowing them more creative control and providing enormous energy savings potential. Shaping the light is now even easier, more individualistic and flexible than ever before – to enhance the quality and efficiency of light in the outdoor area.

Qualitative lighting design concepts in outdoor projects are effectively implemented using reliable design tools. The system design of ERCO's range helps implement these concepts in every phase.

tune the light also means applying an intelligent, creative design concept that optimises the lighting to harmonise with spatial situations and usage. Examples from all areas of outdoor lighting, planning information and technical explanations include an extensive spectrum of possibilities.

The more specific the design of the lighting tool to suit the application, the more effectively it can fulfil its task. For this reason, the highly sophisticated range of products for outdoor applications are presented as a comprehensive system with technical information and applications.

The Light Factory

The ERCO factory consists of price-winning industrial buildings as a living expression of the corporate culture.

ERCO's lighting tools for indoor and outdoor areas prove their qualities in applications both within the company and in its surroundings.

Vertical illuminance, qualitative lighting design, effective lighting technology, intelligent lighting control and efficient lamps: these five factors produce efficient visual comfort and define the appearance of ERCO at night.

ERCO specialises in producing engineering hardware and software for architectural lighting. First and foremost, we see ourselves as selling light, not luminaires. This approach, which places the immaterial "software" of light above the physical hardware of the luminaires, has been the trademark of our work for many years. That's why we call ourselves: ERCO, the Light Factory.

Light interprets spaces and helps us to perceive and experience them. In this sense, we consider light to be the "fourth dimension" of architecture.

Making good architecture even better through the most appropriate lighting is what we see as our cultural contribution and the raison d'être of our activities. Today, ERCO illuminates museums, universities, chain stores, churches, airports, hotels, administration buildings, private homes and much more. Irrespective of whether the architectural concept emphasises functionality or presentation: our goal is, and has always been, to find a solution that does justice to the specific use and architectural features of each project.

The ERCO indoor luminaires, outdoor luminaires and lighting control systems combine to form a comprehensive range of lighting tools for complete, integrated architectural lighting solutions. The luminaire is a lighting tool, a piece of lighting equipment with a special practical purpose.

At a time when lighting and architecture are increasingly being looked at in terms of their energy efficiency and conservation of resources, ERCO is pursuing its "tune the light" approach to develop innovative lighting tools that perfectly combine efficient visual comfort with scenographic design possibilities. This results in lighting projects implemented in outdoor areas being publicly appreciated while defining effective quality standards for lighting concepts. This brochure intends to provide background knowledge, examples and inspiration for the use of light in all types of outdoor applications.

Radiant cities, glowing landscapes
Light reveals space and enhances images

The development of light in the outdoor environment reflects the evolution of modern society. By providing artificial lighting in public places, the rhythm of urban life as it alternates between day and night has been instrumental in the process of man's colonisation of time.

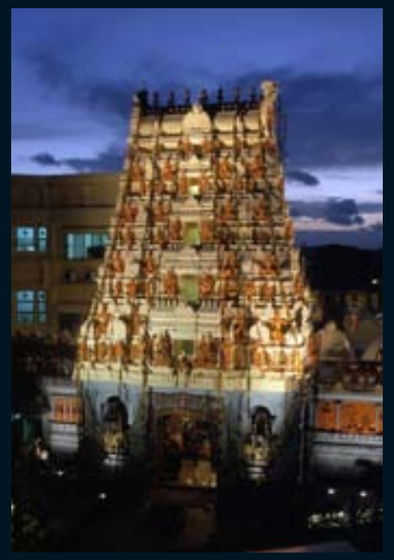
Today, metropolises around the world are competing for the most recognisable nighttime appearance, for striking light effects, a designed "lightscape". At the same time, the contrast between interior and exterior in architecture is steadily disappearing. At night, transparent buildings are transformed into structures that shine from within. The interior lighting concept carries over onto the outside and must be seamlessly combined on the outside of the building. Lighting design necessitates an integrated approach – taking into account the conditions on the outside, such as exposure to the weather and pollution. Both in the dense urban spaces of the cities and in the surroundings of private buildings, the requirement is growing for precision lighting, for energy efficiency and for visual comfort. This necessitates a new generation of lighting equipment – highly precise design tools for light in the outdoor area.

MUDAM Musée d'Art Moderne, Luxembourg Kirchberg.
Architect: Pei Cobb Freed & Partners, New York. Lighting design: ARUP, London; Fisher Marantz Stone, New York; Projekt Licht – Andreas Thiel, Saarbrücken.

The New York Times Building, New York.
Architect: Renzo Piano Building Workshop, Genova/Paris; FXFowle Architects, New York.
Lighting design: OVI Office for Visual Interaction, New York.

Indre Kai – Harbour front and bridge, Haugesund.
Architect: Smedsvig Landskapsarkitekter AS, Bergen.
Electrical engineering: Multiconsult AS, Nesttun; Cowi AS, Haugesund.

Sri Senpaga Vinayagar Temple (Hindu temple), Singapore.
Architect: Designchart Architects, Singapore.
Lighting design: Er. V R Lingam, Singapore.



Sheikh Zayed Mosque, Abu Dhabi.
Architect: Yusef Abdelki (design); Halcrow (construction).
Interior design: Spatium Architects, Milan.
Lighting design: Speirs and Major Associates, Edinburgh.

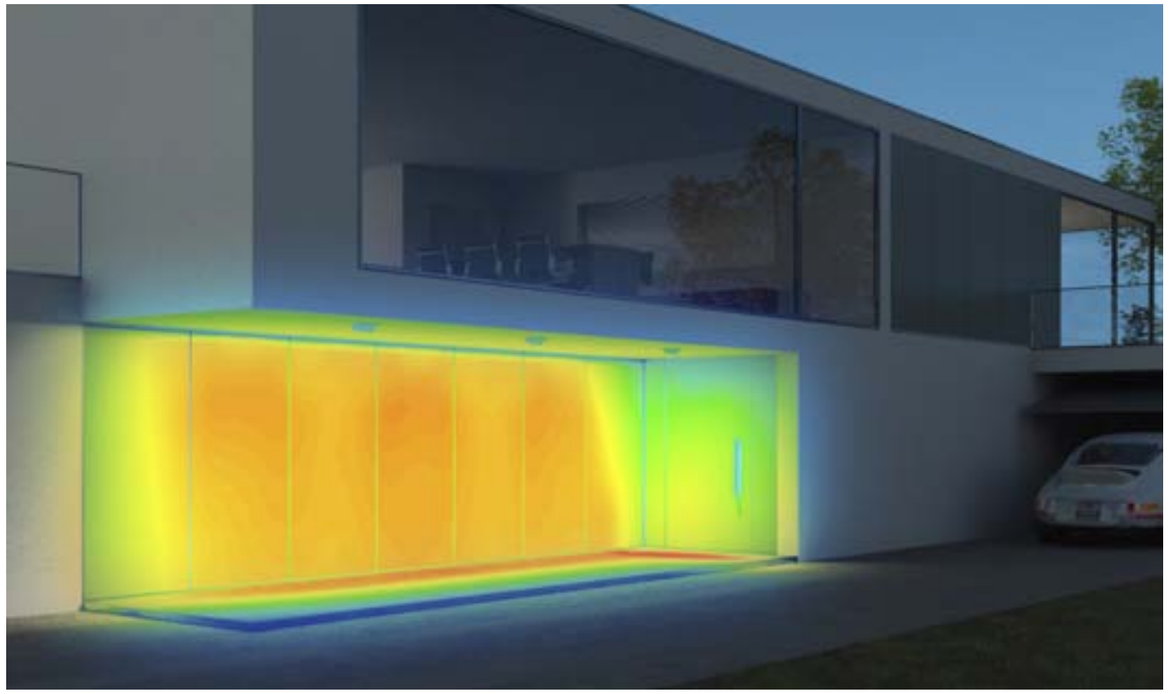
Benrath castle, Düsseldorf-Benrath.
Lighting design: Lamprecht architects, Vienna.

Brandenburg Gate, Berlin.
Lighting design: Kardorff Ingenieure, Berlin.

Millenium Grandstand Horserace track Nad al-Sheba, Dubai.
Architect: EO Engineers Office, Dubai.
Lighting design: EO Engineers Office, Dubai.

Grote Markt (market place), Antwerp.
Architect: City Antwerp, Public Lighting department, Rudy de Bock.
Lighting design: Lichtvormgevers België BVB.

tune the light: Light qualities
Efficient visual comfort



Lighting requires energy. Everyone involved in an aspect of lighting – from the manufacturer to the designer and the user – should use the limited resources responsibly. Against the background of rising energy costs, architectural lighting has made enormous progress over the past few years and has already achieved a significant level of efficiency. Efficient visual comfort as promoted by ERCO means steadily improving both the energy efficiency and the light quality – through innovative technical and design-oriented approaches.

Efficiency through visual comfort
Man and his perception determines whether lighting is efficient. Irrespective of any technical measure of efficiency, if light produces glare, it will impair vision and diminish people's comfort, resulting in wasted energy. The eye is forced to adapt and the pupils contract. The result is that even zones of high illuminance will appear relatively dark in comparison with the dazzling source of light. Glare-free, comfortable light, by contrast, creates optimum viewing conditions for the human eye. From the outset it allows the designer to use an energy efficient solution with lower illuminance levels and subtle contrasts.

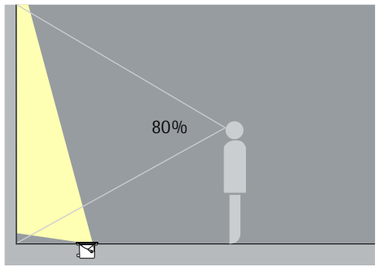
Less can be more
The investment in light quality is beneficial from both an economical and an ecological point of view. A carefully planned and implemented lighting concept using high-quality products effectively is more attractive to the client and user. In the long run, it will produce savings in both operating and maintenance costs. Specialised, professional lighting tools are highly efficient in achieving a specific light effect in a differentiated lighting concept. They invariably replace several non-specific, cheap products, which compensates for their higher price. Modern, efficient lamps reduce the connected load of the lighting system and the thermal load – with additional positive effects, such as the size and operating costs of air conditioning and ventilation systems. Intelligent designs and high-quality lighting tools ensure lighting solutions that reduce the operating costs while meeting all the aesthetic, functional and ecological requirements.

Using synergies
To optimise efficient visual comfort in lighting concepts, ERCO has cooperated with designers and users to formulate five factors which reinforce each other and in practice result in significant increases in light quality, resource savings and economic efficiency.

5 factors for efficient visual comfort

- Vertical illuminance
- Qualitative lighting design
- Effective lighting technology
- Intelligent lighting control
- Efficient lamps

Vertical illuminance
Vertical illuminance is a characteristic feature of well-designed, economical lighting concepts. For this reason, ERCO offers a particularly wide range of appropriate lighting tools. Vertical illuminance using special wallwashers is far more important to the subjective perception of brightness than the light on horizontal surfaces. This is taken into account in perception-oriented lighting design as an optimal solution that contributes significantly to meeting the requirements of the users of architecture and can help save energy if used in an appropriate lighting concept. So, for example, the impression of brightness in a room is created more efficiently using a differentiated lighting concept which involves wallwashing than a uniform level of brightness resulting only from direct ambient lighting. The average illuminance can be decreased accordingly, reducing the required number of luminaires.



Perception of vertical surfaces
Due to the natural orientation of our visual field, the vertical planes of an environment constitute around 80% of our perception and thus determine our impression of brightness.

Wallwashing, impression of brightness and efficiency
The rule that vertical illuminances are more important for the impression of brightness in a room than horizontal illuminances applies outdoors as well as indoors. The subjective impression can be used to achieve a brighter impression without increasing the energy consumption. Alternatively, the same brightness impression can be achieved with lower energy consumption. In either case, the result is an increase in the overall efficiency of lighting. An illustration of this is the residential entrance hall, in one example illuminated using horizontal lighting provided by downlights, alternatively using vertical illuminance from wallwashers.

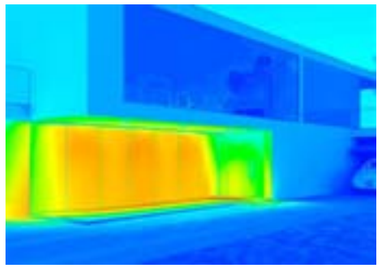
Horizontal lighting
The downlights create illuminances primarily on the floor around the entrance, but also as intersecting beams on the wall. Seen from a distance, however, the entrance area appears dull and is poorly perceived against the surroundings.

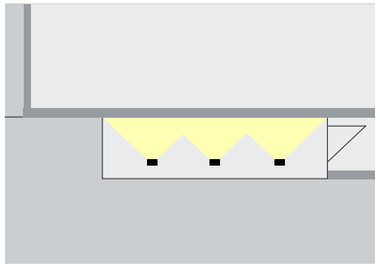
Luminaires used:
5 Lightcast downlights HIT 35W
Total connected load: approx. 175W

Vertical illumination
The concept of wallwashing with less luminaires and lower energy consumption produces the impression of a much higher ambience and improved visibility. The light which is reflected off the wall is sufficient to illuminate the floor area of the entrance.

Luminaires used:
3 Paratec wallwashers HIT 35W
Total connected load: approx. 105W
Energy savings: 40%

The false colour diagram explains the uniformity of vertical lighting. This quality depends on the characteristics of the wallwashers used and on their offset and spacing distances. The details required for planning and design are included in the product documentation for each ERCO wallwasher.





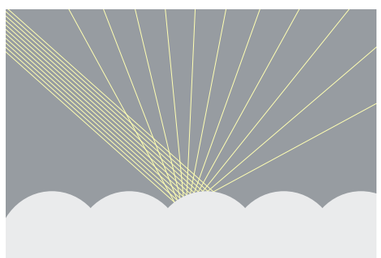
tune the light: Light qualities
Efficient visual comfort

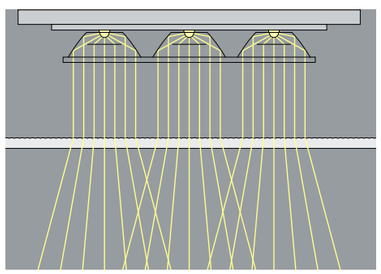
Qualitative lighting design
Careful, perception-oriented lighting design uses light specifically to meet the requirements of the user: vertical lighting, for example, provides a subjectively high impression of brightness in a room. The same applies to controlled accent lighting which is invariably more effective than blanket high levels of lighting. Lighting tools which provide good visual comfort prevent glare and inherently allow the designer to produce an energy efficient solution with lower illuminance levels and subtle contrasts. The variety of efficient and differentiated lighting tools, indeed the scope and structure of ERCO's entire Program, is orientated towards qualitative lighting design.

Accent lighting
Qualitative lighting design concentrates on the essentials in architecture, which results in numerous potential ways of lower energy consumption.

Scenic lighting
Light scenes recalled only where required provide enormous energy savings potential – whether manually controlled or automated through timers or sensors.

Effective lighting technology
Efficient, precise optical systems lower the energy requirement for lighting. A comprehensive toolbox of lighting equipment ensures optimal and thus efficient light distribution for specific lighting tasks. This extends from the asymmetric wall-washer and various spotlight characteristics to the reflector lens system for illumination of product displays in shops. Innovations such as the ERCO Spherolit reflectors provide both high light output ratios and visual comfort. New light sources such as high-power LEDs with their directed beam require entirely different light guidance systems than conventional lamps, which creates new lighting technology challenges. The result is lighting tools which give the user complete control and allow effective planning.

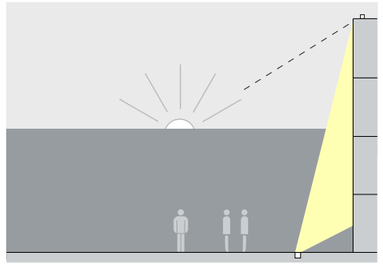




Spherolit reflectors
This exclusive ERCO reflector technology optimally combines visual comfort and efficiency. Due to the different shapes of the computer-calculated spherolites on the reflector surface, the reflector characteristics can be exactly controlled over a wide range.

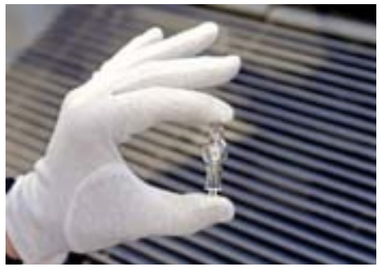
Optoelectronics
Lighting technology is also one of the key competences of ERCO where LED light sources are concerned. The focus here is on lens systems made of high-quality optical plastics. Customised LED modules have a collimating lens developed and produced by ERCO, which focuses the emitted light in a parallel beam. An additional spherolite lens precisely controls the beam angle to determine the light distribution of the luminaire.

Intelligent lighting control
ERCO's DALI technology simplifies scenic lighting and makes it economical. Individual light scenes to suit each situation are selected and controlled by the user. This is in combination with automated light management using sensor systems and timer programs which have the potential for enormous savings. Typical scenarios include the use of presence detectors to dim or switch off the light in unused rooms, and twilight switches or analogue daylight sensors to recall light scenes commensurate with the amount of available daylight. Particular attention is given to factors such as ease of installation, setup and operation, which all contribute to the high level of acceptance of these systems by the users.



In terms of lighting installations with control systems such as Light System DALI, the connected load only indicates the theoretical maximum: the actual consumption will be determined through the use of the programmed scenic dimming.

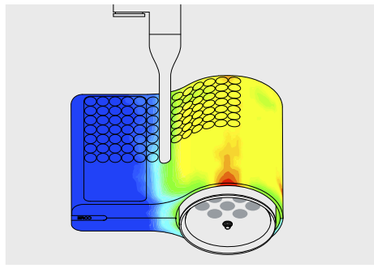
Efficient lamps
ERCO is heavily involved in the development of LED lighting equipment to make practical use of the many advantages of LEDs in terms of luminous efficacy and functional life. ERCO also continues to provide an exceptionally wide range of products for use with economical, long-lasting metal halide lamps and compact fluorescent lamps.



Metal halide lamps are sophisticated, long-lasting and highly efficient lamps. They are available in many wattages for a wide range of applications.

As light sources, LEDs have already achieved a significant level of efficiency and still hold further development potential. Their extremely long life and optimal dimmability qualify them as the sustainable light source of the future.

Thermal management
Because all artificial light sources generate excess heat, ERCO's resource-conscious thinking determines that all luminaires are designed to ensure effective dissipation of this heat. The result is that lamps and heat-sensitive electronic components, e.g. control gear and LEDs, can work to their full potential throughout their entire life.



Modern control gear
Electronic control gear provides greater comfort than conventional control gear and is more efficient. It is smaller, protects the lamps and is a far more environmentally friendly option. ERCO only uses lead-free soldered electronic components.

tune the light: Light qualities
The language of light

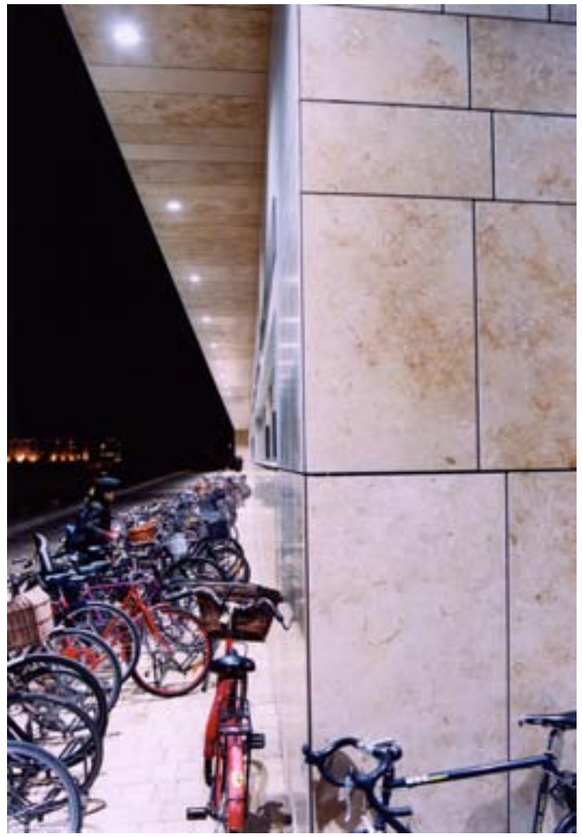
Ambient luminescence, focal glow, play of brilliants. These are the principles of qualitative lighting design. In the 1950s, the lighting designer Richard Kelly borrowed ideas from perception psychology and theatrical lighting and combined them into a uniform concept for lighting design. He separated the qualities of light into three basic functions: ambient luminescence, focal glow and play of brilliants.

Ambient luminescence concerns the general lighting of the surroundings. In qualitative lighting design, ambient luminescence is not the final goal but simply serves to provide a background canvas for more advanced lighting design. Ambient luminescence responds to the basic requirement for physical orientation within a space.

Focal glow goes beyond the general ambient lighting: it relates to directed light which accentuates any eye-catching features and creates hierarchies of perception. Important areas are emphasised while unimportant areas fade into the background. Focal glow is used as a basic approach for the presentation of goods and objects.

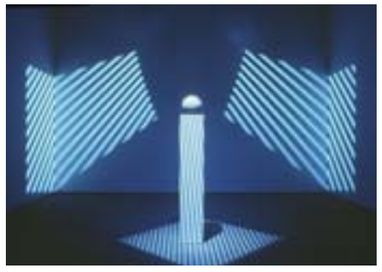
Play of brilliants refers to decorative lighting effects with colours, patterns and dynamic changes which create atmosphere and magic. Possible light sources for this effect include lighting tools for light effects (e.g. varychrome luminaires), decorative luminaires (chandeliers) and light objects; neon signs and illuminated displays also fall into this category. It is only when ambient luminescence, focal glow and play of brilliants are combined that a lighting concept is complete.

There are codes of practice and regulations for outdoor lighting that often initially seem to restrict the possibilities. However, this is a good thing as master plans, urban marketing or event concepts often involve themes and ideas that can be communicated using both spatial and lighting design. A successful outdoor lighting concept will be based on an understanding of the language of light.



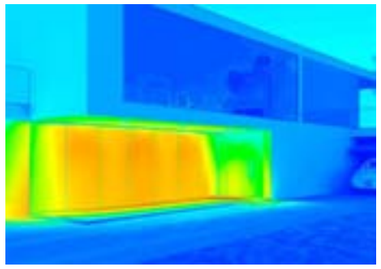
Ambient luminescence
refers to uniform general lighting. This type of lighting, e.g. through downlights along the periphery of a building or through uniform vertical lighting, enables the user and observer to get their bearing and provides a feeling of safety.

Focal glow
typifies accent lighting used to emphasise objects, areas and specific zones in a space and to create hierarchies of perception. It is a primary consideration in the illumination of scenery, as well as outdoor and urban spaces which are intended to attract attention.



Play of brilliants
is the decorative light, the light that results in surprise and amazement; it is light as an aesthetic end in itself. Light effects such as dynamic colour progressions or light patterns with Gobo projections are used to create a visual attraction. The same can be said of decorative luminaires, light objects or neon signs which can provide the play of brilliants in the lighting concept.

tune the light: Light qualities
Vertical illuminance



Advantages of vertical illuminance

Architecture
Light is the fourth dimension of architecture. Lighting can enhance the effect of meticulously planned buildings and extend their visual presence in public places well into the night. Vertical lighting in particular highlights the architecture as a whole, increases its spatial effect, resulting in the creation of a high-quality environment.

Perception
Man perceives spatial dimensions and connections intuitively through vertical surfaces. These constitute the majority of the visual field and provide the crucial information for our perception. This is why the light on space-defining surfaces is a central element of qualitative architectural lighting.

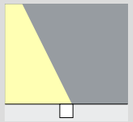
Efficiency
Perception-oriented principles of planning and design provide enormous efficiency potential in architectural lighting. Directing the light specifically onto surfaces relevant to perception and using innovative technology is the key to high-quality design and economically advantageous lighting solutions.

In architectural lighting, a perception-oriented approach to planning combined with innovative technology results in high-quality designs but also economically advantageous solutions. Visual comfort is particularly important outdoors since glare or excessive contrasts can significantly affect our perception in an otherwise dark environment. Vertical illuminance creates an optimal visual environment in more ways than one: the homogeneous illumination of vertical surfaces facilitates orientation increasing the feeling of safety. Through a balanced distribution of illuminances, it reduces the contrasts and reliably prevents glare. Both the architectural elements and the vegetation can be illuminated as space-defining surfaces here.

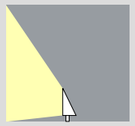
Vertical illuminance can be achieved by various techniques. ERCO's range of products comprises an incomparably wide selection of special lighting tools for these applications. In particular, asymmetrical reflector geometries ensure homogeneous light distribution on the wall, preventing spill light and achieving maximum efficiency.

Tools for vertical illuminance

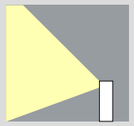
Wallwashing with uniform light distribution
Lighting tools for solutions which are subject to the most stringent standards in terms of homogeneous light distribution emphasise the vertical plane as a space-defining element.



Tesis lens wallwashers

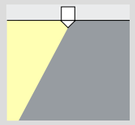


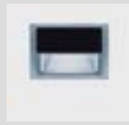
Powercast



Parscoop

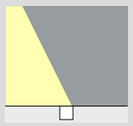
Lightmark



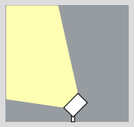


Paratec

Wallwashing with focal point
Highly efficient lighting tools with a focal point at eye level are used for special highlights on important elements on the wall, while illuminating the entire plane.

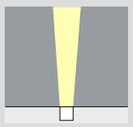


Tesis focal wallwashers

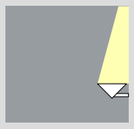


Focalflood floodlights

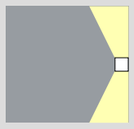
Wall brightening through grazing light
Grazing light for wall brightening emphasises the material and surface structure of the element. To save space, the luminaire is mounted close to, or directly on, the wall.



Tesis uplights

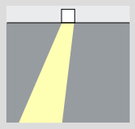


Focalflood facade luminaire



Cylinder

Lightmark Kubus



Lightcast

tune the light: Light qualities

Lighting networks for scenography and efficiency

Lighting control vastly increases the scope of architectural lighting – not only in regard to scenographic effects and concepts, but also by improving user-friendliness and energy efficiency. In the past, the incorporation of lighting control always required considerable effort; in terms of planning, installation and material. The latest, advanced technologies have now removed this obstacle.

Light System DALI
ERCO's lighting control system Light System DALI uses an innovative approach to the use of scenography and efficiency in architectural lighting. It applies DALI (Digital Addressable Lighting Interface) technology to individually addressable luminaires which, when combined with the ERCO Light Studio software, forms an integrated system. Together with ERCO's comprehensive range of DALI-compatible indoor and outdoor luminaires and ERCO's DALI track, intelligent lighting control is now easier to use and more economical than ever before.

New standards in ease of operation, range of functions and creative control are established by the consistent application of software and hardware. For example, colour selection for DALI-compatible varychrome luminaires in the ERCO Light Studio are identified clearly and interactively by a mouse click. Once a system is activated, the DALI-compatible ERCO luminaires – known as Light Clients – are recognised by the Light Server and clearly displayed in the software. DALI-compatible luminaires of other manufacturers can also be integrated into Light System DALI and be controlled just as easily as ERCO Light Clients. The Light Server 64+ is designed to be networked with additional servers so as to be able to control virtually any size of installation.

The Light System DALI consists of the hardware components Light Server and Light Changer and the software Light Studio. The Light Server is a DALI controller that stores system and scene data and provides the control functions. Day-to-day operation takes place via the compact, wall-mounted ERCO Light Changer control panel or via standard push-buttons. To set up light scenes and for other more complex operations, designers or users run the ERCO Light Studio software on a PC connected to the Light Server or on the Light Changer via a USB connection. The Light Server uses the DALI protocol to communicate with the Light Clients, i.e. all the connected DALI-compatible luminaires, through a two-core control cable. The bus technology and the switch and dimming functions integral to the control gear mean that permanent wiring of individual circuits and the installation of vast dimmer banks in switch cabinets is no longer required. By using DALI track accessories, the well-established and reliable ERCO track is ideal for the operation of DALI-compatible ERCO spotlights and Light System DALI.

Light Changer
Control panel featuring touch screen technology, used for the everday operation of the Light System DALI.

Light Studio
Configuring the Light System DALI is a convenient, user-friendly process. Its wide range of functions are available by using the integrated Light Studio software. Four modules – Light Master, Light Book, Light Timer and Light Sequencer – allow even complex design tasks to be dealt with competently and intuitively.

Light Master
Light scenes, which may contain colour effects and dynamic progressions, are created, designed and edited in the Light Master module. User-friendly tools such as the colour wheel are available especially for the control of varychrome luminaires.

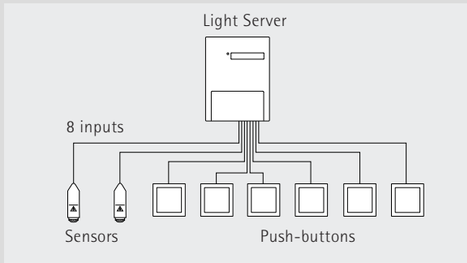
Light Timer
The Timer module allows light scenes to be recalled at predefined times. The time and calendar functions provide great flexibility for the creation of scenographic lighting.

Light Book
The Light Book is used for the organisation and spatial structuring of Light System DALI installations. Its main function is to create zones and assign Light Clients or Light Changers to these zones.

Light Sequencer
The Light Sequencer is a tool designed for the purpose of defining and storing sequences of light scenes as a timed progression. It allows scenes to be prepared in a sequence without the need for a particular starting time.

Light Studio: colour wheel
The Light Studio with its colour wheel features a user-friendly and familiar control panel for DALI-compatible luminaires with varychrome technology for infinitely variable colour changes. It provides an intuitive and interactive choice of light colours to relieve the user of the complicated input of separate dimmer settings for each colour component. Defined colours can be named, stored and are reproduced exactly.

Light Sequencer
This module of the Light Studio software regulates the movement of light. The Light Sequencer complements the functions for dynamic progressions and the Light Timer by adding further scenographic scope for design. The Light Sequencer is a tool which is used to define, name, store and edit sequences of light scenes through timed progressions and to recall them through program control.

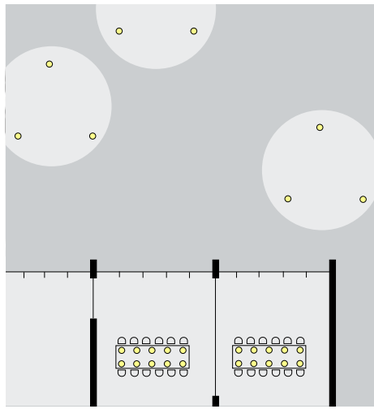


Sensor inputs
The ERCO Light Server has a total of 8 digital/switch inputs, four of which can optionally be used as analogue inputs. This extends the available scenarios and allows conventional switches, push-buttons, digital or analogue sensors to be used for the control or recall of preprogrammed light scenes or sequences depending on specific variable conditions such as room occupancy or daylight.

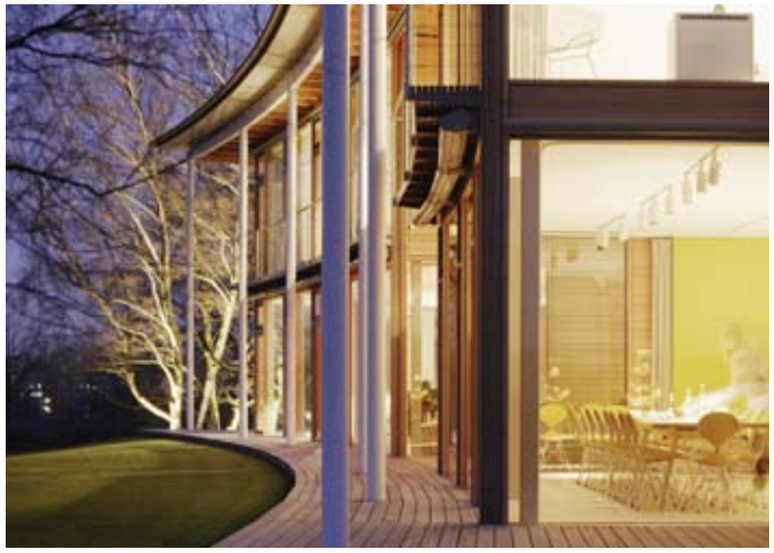
Working methods and planning techniques
Indoors/outdoors, Dark Sky and master plans

Indoors and outdoors
The illumination of outdoor areas provides us with the opportunity to change the view from within a building. In the evenings, buildings with glazed facades often create a mirrored effect of the inside: looking out becomes difficult as the glass – transparent during the day – turns black after dark. But when the luminances outside are higher than those of the reflections on the glass, the sense of an enclosed space vanishes to allow a perception of depth in the outdoor area. A differentiated outdoor lighting design with specific effects in the foreground, middle and background increases the impression of perspective. In the interior, luminaires with good glare control can further contribute to the avoidance of reflected glare on glass surfaces, which will improve the visual comfort when occupants are looking outside.

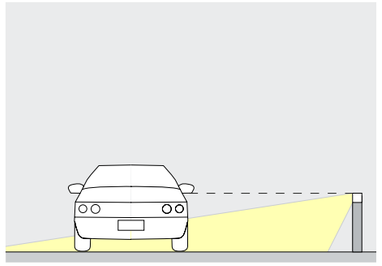
Conversely, glass facades allow people who are outside to look into the lit building, the internal light reveals depth to those on the outside. Allowing people to see behind the facades of the building enhances the character of a place, making it an experience. As daylight fades and the light inside becomes visible, buildings with glass facades which reflect the surroundings during the day add a distinctive dimension to urban life.

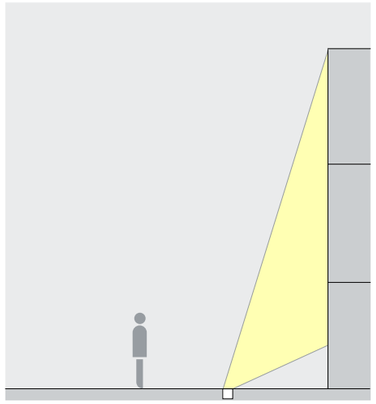


Light in the outdoor area also provides a new view for those on the inside: vegetation which becomes visible increases the perception of external spatial depth.



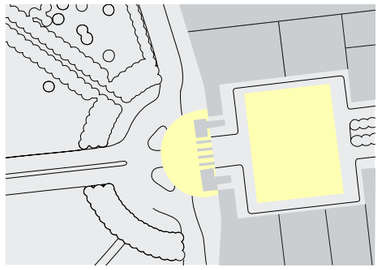
Dark Sky
In the past, the desire to enhance as many places and spaces as possible using artificial light has on occasions taken precedence over environmental concerns. At times, the night has become almost as bright as day, and the thoughtless use especially of luminaires with indiscriminate light distribution has added to the problem of light pollution. Light pollution refers to the spill light that causes a disturbance in a given context due to its illuminance, beam direction or light spectrum. Spill light and glare impair visual comfort; information content that was to be conveyed fails to have the desired effect. The ecological consequences include a waste of energy and negative impact on both flora and fauna. Dark Sky requires that lighting design for outdoor areas is restricted to only that which is essential. If this is applied, then light pollution is avoided and for astronomers, observation of the night sky is enhanced. This approach requires an effective design concept with a luminaire technology tailored to suit. Cooperation between lighting designers, architects, landscape architects, building owners, electrical installers and luminaire manufacturers is required for the successful implementation of a Dark Sky concept.





Spill light can be prevented by using precise lighting technology and the correct arrangement of luminaires to ensure optimal visual comfort for passers-by and drivers.

Master plans
Similar to urban development master plans, the same is required in the context of lighting design to document its principles for the after-dark appearance of urban development, city centres and even entire regions. One of the objectives of such planning is to establish the identity of a place and to define a concept that makes for an attractive appearance at night. The fundamental elements of a lighting master plan include enhanced orientation by focusing on city entrances, landmarks and traffic routes, a concept that ensures the visibility of the city from a distance by detailing the specifications for the silhouette, and guiding principles for the lighting design of sites. The master plan is then used to identify the objectives of the specific project in relationship to the environment. In addition to qualitative aspects, a lighting master plan might also provide guidelines for economic efficiency, environmental protection and road safety.



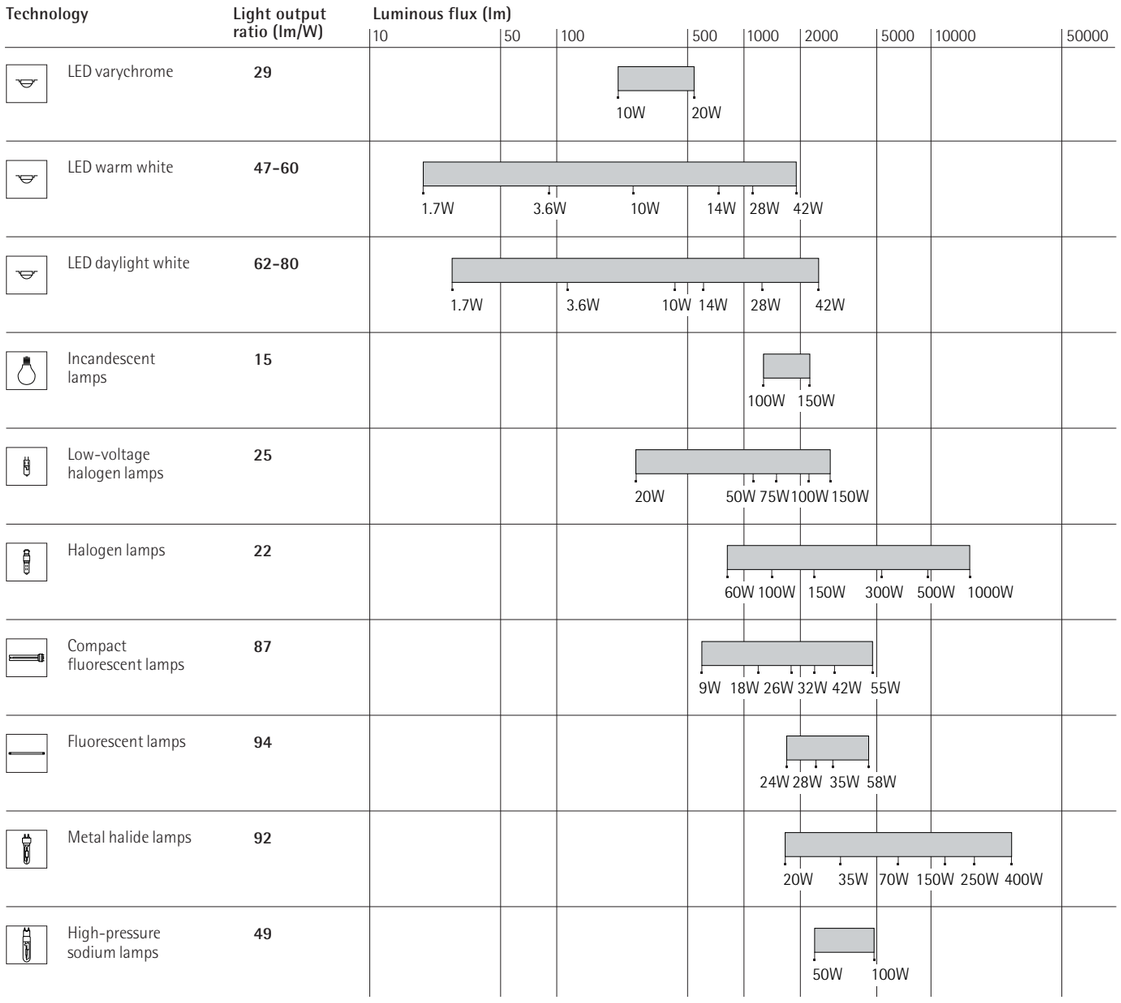
Lighting master plans can be used to identify principles for the lighting design of a specific building to ensure that consistent parameters are applied to urban development.

Working methods and planning techniques
Lighting design using lumen categories

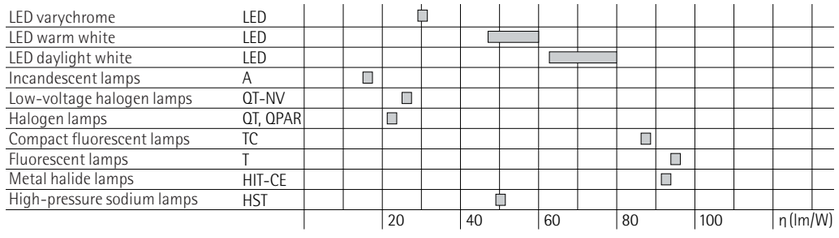
Designing a lighting scheme using lumen categories simplifies the process by early identification of suitable lamps and wattages. Irrespective of the type and efficiency of the lamp, the luminous flux indicates the available light output. Having identified the lighting task, the required luminous flux can be derived using criteria such as object size, lighting distance and ambient brightness. The lumen table shows the lamps available in each lumen category. Due to different light output ratios, the lamps may produce the same luminous flux but from different wattages.

Luminous flux
The luminous flux describes the total light emitted by a source. It is measured using the radiant power relative to the spectral sensitivity of the eye.
Unit: Lumen (lm)

Light output ratio
The relation of the luminous flux emitted to the wattage of a lamp.
Unit: Lumen/Watt (lm/W)



Efficient lamps
ERCO is heavily involved in the development of LED lighting equipment and therefore makes practical use of the many advantages of LEDs in terms of light output ratio and functional life. At the same time, ERCO continues to develop a wide range of products for use with economical and long-lasting metal halide lamps as well as for compact fluorescent lamps.

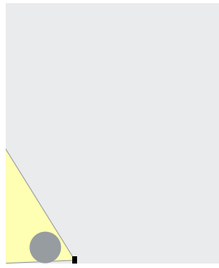


Lumen category			Forms of lighting	Examples of application
< 50 lm			Orientation lighting in dark surroundings, identification of architectural lines, directive lighting	Stairs, pathways, orientation systems
< 500 lm			Accent lighting for smaller objects over short distances, grazing light, orientation lighting	Homes, gardens, pathway lighting, display cabinets, orientation systems
< 2,000 lm			Accent lighting for medium-sized objects over medium distances, wallwashing up to 3m, grazing light, projection	Art galleries, homes, gardens, pathway lighting
< 5,000 lm			Accent lighting for larger objects, wallwashing up to 4m, washlighting, grazing light, projection	Museums, shops, wide pathways, trees, parks
< 10,000 lm			Ambient lighting, washlighting and accent lighting for large objects or great distances, wallwashing up to 6m, grazing light, projection	Shops, exhibition rooms, museums, atriums, facades
> 10,000 lm			Ambient lighting and washlighting in very high rooms, floodlighting and accent lighting of very large objects at great distances	Halls, industrial buildings, airports, facades, monuments, towers

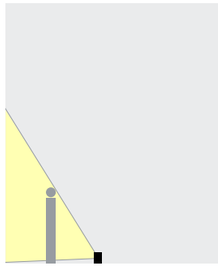
Working methods and planning techniques
Lighting design and scale

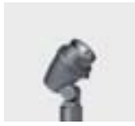
Outdoor projects of large dimension, such as the lighting of squares or high-rise buildings, involve large distances that call for precise lighting technology and efficient lamps. It may seem obvious simply to scale up the size of the luminaires and the illuminances to suit the project dimension. Quantity, however, should never be confused with quality. Brightness alone will not do justice to large-format architecture or landscaping. For differentiated lighting solutions in projects having larger dimension, both the range of lighting equipment and the luminaires and wattages may all need to be considered. Weighing up all the alternatives allows the designer to ensure optimal visual comfort and economic efficiency in each specific case.

Thanks to scaling into different housing sizes and wattages, the system design of the Beamer, Focalflood and Parscoop ranges covers the entire spectrum of small to medium-sized outdoor lighting tasks.

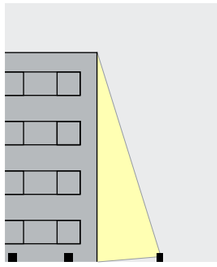


Small
Relatively small objects over short distances require a suitably wide light distribution. Even low illuminances are enough to ensure good perception. Small lamps with a low luminous flux, on the other hand, require a smaller size of luminaire in order that the relation between the size of the object and the luminaire is balanced. Excessive illuminances can result in glare, particularly where smaller objects with bright, shiny surfaces are involved.

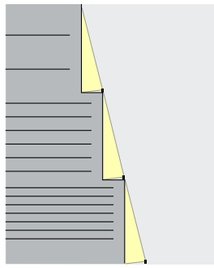




Medium
Larger objects or planes require greater distances and, accordingly, higher light output of larger lamps. Consequently, the luminaires too are larger. To ensure optimum illumination of larger objects, a single luminaire is usually insufficient, as large parts of the object might otherwise be in the shadow. Often, the observer in medium-sized lighting situations remains outside the light beam and is not bothered by direct glare. Precise planning makes it possible to select the correct distance so that the luminaires can be installed outside the observer's visual field.



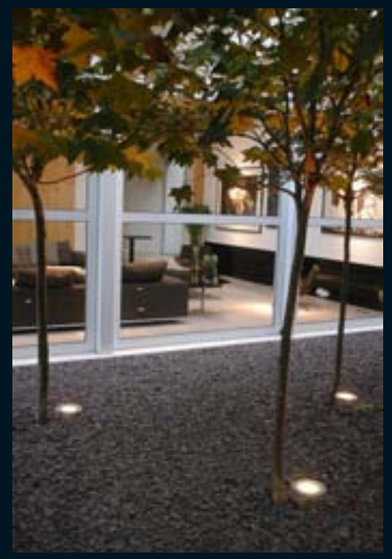
Large
Luminaires for high light output require large, powerful lamps with appropriate reflectors. The resulting heat generation in the luminaire calls for large housings to ensure faultless operation of the heat-sensitive control gear. In large scale lighting situations, people might move between the luminaire and the object and be disturbed by glare. Narrower beam angles in combination with lower lamp wattages and a greater number of luminaires will result in visual comfort.

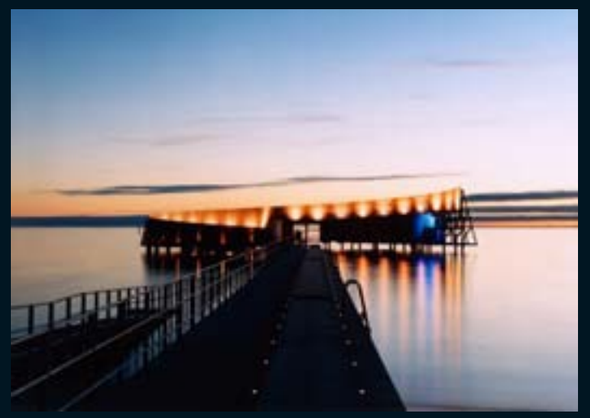


Very large
In very large lighting situations, scaling through luminaire size with constantly increasing wattages and lighting distances reaches its limit. A highly efficient lamp with a wide beam angle might well result in significant glare when a passer-by walks between the building and the luminaire. In many cases, there is insufficient space to increase the lighting distance. One option is to increase the number of luminaires to illuminate the area in sections. The narrower the beam width of the luminaires, the better the visual comfort. In open spaces, the size of the luminaire is usually of less importance. Installed around the base of the architecture, oversized luminaires, on the other hand, will appear to the observer to be too large.

When evening comes
Impressions of cities and landscapes

Architectural lighting in the outdoor area means having to deal directly with the effects of the elements, with nature, but also with the social realities of the cities. Lighting designers and manufacturers of lighting equipment both carry particular responsibility – but at the same time have the opportunity to create scenes and images of sheer brilliance.



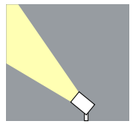


Situations
Facade

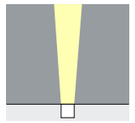
Vertical surfaces in an urban setting contribute significantly to the spatial definition of squares, traffic routes and buildings. From the point of view of both perception psychology and design, this makes facade lighting a key element in the night lighting concept for urban areas. Different types of facades require specific lighting concepts to reveal the qualities of the architecture.

In the same way as buildings look different in daylight, sophisticated lighting solutions give them a different appearance at night. In principle, facades that are predominantly solid require a lighting design that is distinct from transparent buildings. In addition to providing wallwashing effects on massive facades, a further option is to accentuate the building contours or individual building elements. In contrast to the illumination of a massive frontal elevation, glass architecture can give the impression of light shining outwards from the inside when specific areas inside the building are illuminated. During the day, passers-by do not often see a building inside because the higher intensity of the daylight causes significant reflections of the surroundings on the glass surfaces. At night, however, transparent buildings seem to gain in depth due to visibility of the interior; the facade structure stands out as a silhouette against the building core.

Once twilight sets in, lighting controls allow light scenes for facade lighting to be automatically recalled through sensor or timer functions.



Beamer spotlight

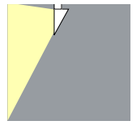


Tesis recessed floor luminaire

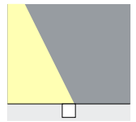
Sensors and lighting control systems

Narrow beam luminaires emphasise the vertical structure of the facade. Illuminated building contours underline the dimensions. The luminaires are mounted close to the facade to produce a striking effect with grazing light that accentuates the texture of the brickwork.

The special asymmetrical light distribution provided by wallwashing creates highly uniform light on the facade. The angle of inclination can be adjusted to ensure that the light is emitted without spilling beyond the roof, in order to comply with the requirements of a Dark Sky concept.



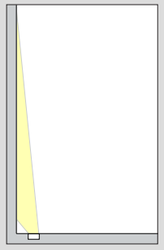
Parscoop floodlight



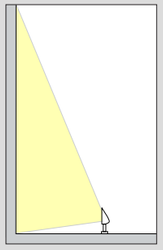
Tesis lens wallwasher

Brandenburg Gate, Berlin: Illuminating the vertical elements using lighting tools with appropriate asymmetrical light distribution effectively draws attention to this landmark. Recessed Tesis lens wallwashers accentuate the columns, while Parscoop floodlights mounted near the top of the gateway raise the impression of spatial depth.

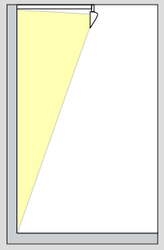
Luminaire arrangement for facade lighting



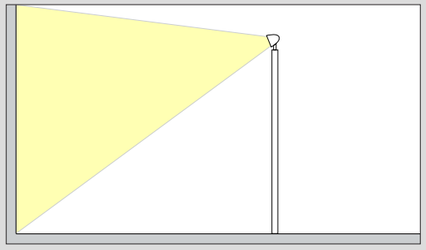
Recessed in-ground luminaires integrate smoothly into their surroundings. Luminaires mounted close to the facade produce an intense grazing light.



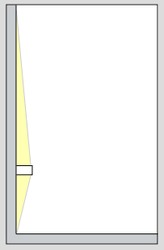
Floodlights mounted at a distance to the facade ensure uniform illumination of the facade without harsh shadows.



Illuminating the surface from top to bottom is consistent with the direction of light during the day and reduces the problem of light spilling into the night sky. During the day, the cantilever arm is clearly visible against the roof edge.



Existing poles such as street light columns are ideal when used to mount facade luminaires. The greater distance to the building renders the facade flatter, as fewer shadows are produced. It is important to consider that when looking out of the building there will be no glare.



Luminaires positioned directly on the facade produce grazing light that can emphasise surface textures through distinct shadows.

Situations
Facade

Street frontages
The Kungsträdgården is a typical postcard view of the Swedish capital. Magnificent palaces of the founding period line a park-like promenade. The lighting columns along the entire street have now been fitted with Beamer spotlights and Parscoop floodlights for metal halide lamps to bathe the historic facades in uniform, energy-efficient light in neutral colours. This example shows that even relatively low, uniform illuminances on facades are sufficient to define urban space in a nocturnal setting through vertical lighting and make it a true experience. Visual comfort is crucial here to avoid ruining the special character of the night scene, but rather to enhance it. Luminaires with excellent glare control enable energy-efficient planning with reduced illuminances and subtle contrasts.

Kungsträdgårdgatan, Stockholm.
Architect: Svante Forsström Arkitekter, Stockholm.
Lighting design: Claes Möller Ljusbyggarna, Stockholm.

Only a few inconspicuous and economically efficient light sources are required to define urban space through discreet, vertical illumination of the facades.

Skyscraper facade
Devising a clever lighting concept with highly efficient lighting tools, the designers here brilliantly mastered the task of illuminating 260m of facade using a grid of white ceramic rods to provide a uniform level of brightness. A multitude of Parscoop floodlights and Beamer spotlights with sculpture lenses were mounted not only onto the facade, but also on adjacent buildings. Metal halide lamps of 250W in combination with highly efficient lighting technology now accomplish what previously required floodlights of 400 to 1000W.

The New York Times Building, New York.
Architect: Renzo Piano Building Workshop, Genova/Paris.
Lighting design: OVI Office for Visual Interaction, New York.

Efficiency and lighting quality were the crucial criteria for the selection of lighting tools for The New York Times skyscraper.

Historic building
Individual, often historic, buildings play a particular role in defining urban features. For this reason, they must be given special attention in a well-coordinated design concept for a city at night. On the Piazza della Borsa in Triest, this was accomplished by uniformly illuminating the facade of the ancient, neo-classical stock exchange using Tesis recessed washlights. Structural elements of architecture such as the columns of the portico or the corner pilasters were additionally accentuated using Tesis directional luminaires. Beamer spotlights were used to highlight the sculptural ornaments. Highly efficient long-life metal halide lamps ensure maximum economic efficiency.

Palazzo della Borsa Vecchia, Triest.
Architect: Claudio Visintini, Triest.

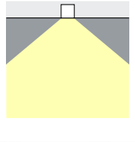
Projectors with excellent glare control and recessed in-ground luminaires with Darklight technology ensure maximum visual comfort for pedestrians – even in the lively, narrow alleys of the old Italian harbour city.

Accents along the shopping mile
Transparent facades with attractively illuminated shop windows define shopping streets. The narrow, vertical structural element of the frontage is accentuated here by the beams from Cylinder facade luminaires. The designers opted for a type of luminaire that primarily acts as a downlight, but also emits light upwards as grazing light. The rhythmic accent lighting is thus complemented by the horizontal illumination of the building periphery – to produce an inviting carpet of light. Fitted with metal halide lamps, this lighting concept presents itself as an efficient, low-maintenance solution.

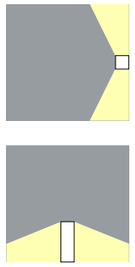
ZARA store on Königsallee, Düsseldorf.
Architect: José Froján & Inditex architectural team.

Situations
Entrance

When approaching a building, the effect of the facade when seen from afar generally gives way to the impression produced by the entrance area. Entrances can be marked using architectural elements or signage – but also by lighting either as a supporting or a dominating medium. Lighting the entrance is the nocturnal visiting card of a building; it creates a unique atmosphere and facilitates orientation. The easiest option to guide the way into the building with light is to ensure that the lighting level here is higher than in adjacent areas of the building. A "welcome mat" – a light carpet at the entrance – serves as a gesture inviting visitors to enter. Additional diffuse light, produced, for example, by vertical illuminance in the entrance area, softens hard shadows on the faces to provide a pleasant basis for initial communication at the door. In terms of orientation, the use of wallwashing also has the advantage that it is highly visible even from a distance. Grazing light can lend a dramatic effect to the entrance scene. Pathway and stair luminaires ensure safe walking on the way in, while harmonised lighting levels create a pleasant balance between the front and background that enhances the overall impression and makes it easier on the eye to adapt when entering the building.



The transparent facade is an open and inviting gesture for people to enter. Downlights provide ambient lighting in the entrance area and lay a light carpet for visitors.

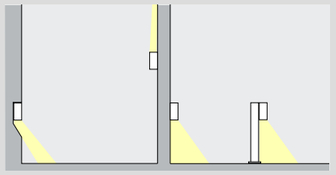


The bollard luminaires serve two functions: their wide beam light distribution illuminates the way to the entrance as well as the vegetation. Their excellent glare control and soft peripheral beam go towards the provision of exceptional visual comfort. The facade luminaires with double front lens further emphasise the immediate surroundings of the front doors.

For a striking effect along hotel driveways, ERCO offers a wide range of lighting tools: recessed in-ground luminaires for accentuation of the vegetation, wall luminaires for illumination of pathways, and downlights to mark the entrance area and provide a friendly reception. The spill light reflecting off the ground illuminates the roof of the driveway from below.

Recessed in-ground luminaires are discreet and remain invisible to the observer – light, not luminaires defines the atmosphere. The anti-dazzle element above the lamp shields the direct component and significantly improves the visual comfort for pedestrians.

Kubus range
The Kubus range of outdoor luminaires provides numerous possible lighting applications in entrance areas: the versions for wall mounting illuminate aspects such as house numbers or lettering by emitting light upwards, or can be directed downwards to light pathways. The recessed wall luminaire is mounted flush with the facade to spread its shallow light onto pathways along buildings or walls. The bollard version is suitable for mounting in open spaces.



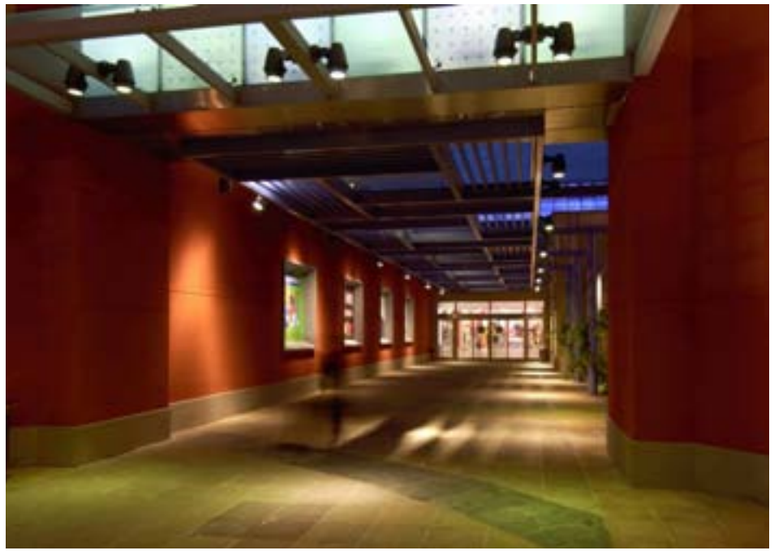
Recessed wall installation | Wall mounting | Bollard luminaire

Situations
Pathway lighting

One of the basic requirements for pathway lighting is to provide sufficient illuminance for people to see stairs and walk safely. A further help for orientation is light accents in the middle distance and in the background of the landscape, as these direct the attention and help guide the way. Lighting of the vegetation along the pathway further adds to the feeling of safety, as it ensures better visibility of the surroundings.

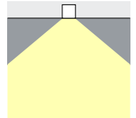
Soft-edged beams directed onto the path itself and low illuminances for the surrounding vegetation help the eye adapt between light and dark zones in the landscape. The Dark Sky technology of bollard luminaires, which prevents light spilling above the horizontal plane, is effective in protecting pedestrians and drivers from glare. Good glare control is also crucial for stair lighting, to prevent dazzle resulting from high luminance from the luminaire.

Often, small orientation luminaires are sufficient to light pathways. While their light intensity is low, their point-source luminance makes them stand out against the surroundings so that their linear arrangement as light spots marks the way. The low illuminances required for outdoor path lighting allow the use of compact and energy-saving light sources such as LEDs or metal halide lamps in 20W version.

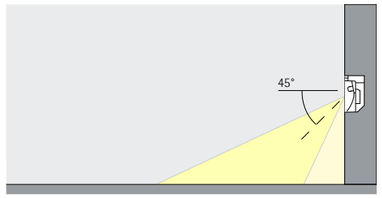


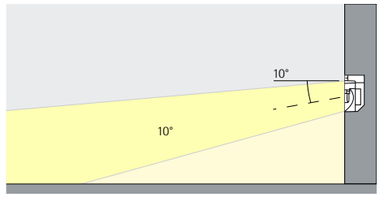
The Beamer spotlight with its narrow beam is perfect for accentuated pathway lighting in this shopping centre arcade. Like a catwalk, pedestrians pass through zones of different brightness, which structures the space and produces dramatic effects.

Due to its asymmetrical light distribution, the Lightmark bollard luminaires can illuminate paths or driveways from the side. Precise light guidance prevents spill light above the horizontal plane to eliminate glare for pedestrians or drivers.



The downlights in the projection from the upper floor create a light carpet around the building and mark the transition between indoor and outdoor area. Through the use of Darklight technology, pedestrians can enjoy optimal visual comfort.



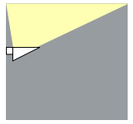


There are two types of light distribution for pathway and open area lighting: wide beam light distribution, which produces a narrow light strip along the building periphery or a wall and serves as pathway lighting; and light distribution with a beam of light projecting deep into an area to extend the lighting as far as possible.

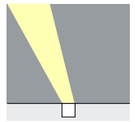
Stair luminaires highlight steps and ensure safety on stairs. The special lighting technology of the Axis Walklight prevents glare even on ascending stairs. The effect of orientation luminaires, on the other hand, is based on the luminance contrast with the surroundings. In linear arrangement, they can be used to mark pathways. The optimal lamp for these tasks is the efficient, maintenance-free LED – either in white or in varychrome technology.

Situations
Urban areas

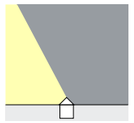
Lighting urban features has become a central planning project for city developers and lighting designers. Turning places into an experience through the use of light and giving them a new dimension of attractiveness is one of the key concerns focused on in the light master plans or in individual projects of many communities. A prerequisite is sufficient, glare-free ambient lighting. With this in mind, the discussion may concentrate on qualitative aspects, the kind of atmosphere to be created through lighting. Squares become visible after dark through vertical lighting of the walls provided by washlighting. Alternatively, the facades may be bathed in a light that appropriately underlines the architectural characteristics of the structures. Accent lighting highlights specific details on the square or the facades. An inconspicuous design and carefully chosen mounting locations prevent the luminaires from disrupting the scene during the day. A well-coordinated lighting concept for the facades surrounding a square is the basis for the implementation of a tightly controlled lighting design.



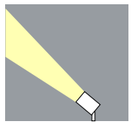
Parscoop floodlights are versatile: pointed down, they illuminate large areas. Mounted with their cover glass pointing up, they illuminate ceilings to emphasise the height while they emit glare-free, soft light downwards through the diffuse reflection.



Tesis recessed in-ground luminaires provide different light distributions from both the round and square housing forms. Consistently discreet in their appearance and with a high level of visual comfort, they are ideal for creating interesting and varied lighting concepts.



Tesis wallwashers with special lighting technology provide a highly uniform light distribution. Their design, which allows them to project slightly above the mounting plane, results in them emitting light beginning right at the mounting plane.



Beamer projectors are ideal for accentuating objects. Available in different versions with base or mounting plate and with accessories, they allow for many mounting options.

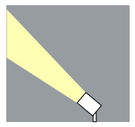
Situations
Monuments, towers, memorials

Differentiated lighting for memorials highlights historical objects in urban areas or landscapes at night. They form reminders of important persons or events. At the same time, they create focal points at the end of axes on pathways, in squares and in parks or are themselves the centre of attention.

The luminance contrast to the surroundings is crucial if memorials are to be perceived from a distance. In a scenic context with little ambient lighting, low levels of illumination are usually sufficient to accentuate buildings. A bright urban environment will require proportionately stronger accentuation to achieve a similar contrast. When approaching a monument, the focus shifts from an overall appearance to the accentuation of details. Since these elements are not meant to produce a long-distance effect, they only require lower illuminance.

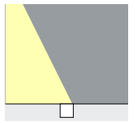
When illuminating monuments, the scope for design ranges from subtle, uniform lighting for acceptable perception on a site at night to expressive, temporary lighting concepts for festive occasions. Memorials serving as a place of contemplation and mourning should be respectfully differentiated from the history behind them. This can be achieved by way of a different lighting design, to provide visitors with an atmosphere conducive to commemoration. Uniform illumination with relatively high illuminances and protection from glare are key aspects in this concept.

Monuments commemorating positive events or representing the local or national identity require a distinctive use of lighting. Light emphasises history at night and may be used on public holidays to provide stage-like effects. The significance of the structure can be revealed through strong definition using brightness, contrast and colours. Cultural monuments can also be crucial elements in an urban layout at night, as a backdrop for concerts and through theatricality to relive history.

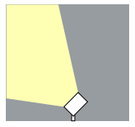


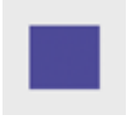
Tall, slim monuments can be illuminated using powerful narrow-beam lighting equipment such as Beamer projectors. In order to reduce light pollution, the spotlights need to be accurately positioned and aligned.

Recessed in-ground luminaires integrate as low-key elements into the architecture of monuments. Darklight reflectors in lens wallwashers reduce high luminances and prevent glare.



The Light Studio software provides user-friendly options that enable the designer to set the light colour of varychrome luminaires and combine them into light scenes.





Concepts without dynamic colour change can include accessories such as colour filters. ERCO provides a range of filter colours that match the natural colours of light throughout the day: amber, magenta, night blue, sky blue. The accessory market offers a multitude of other filters.

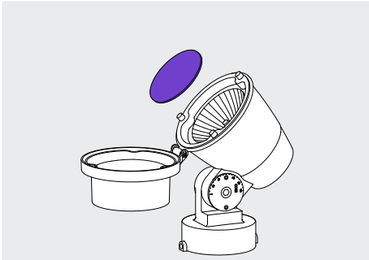
The spectrum of colour effects ranges from subtle concepts to expressive colour sequences for special events.

Situations
Bridges

Bridges connect districts, places and regions. Their design is affected by the quest of engineers to draw elaborate bridges across rivers or valleys and often express this function symbolically. Illuminating a bridge emphasises its symbolic nature in the evening and at night. For this reason, lighting designers often approach this task by picking up on the static characteristics of the construction. Depending on the typology – whether continuous girder, truss, arched or suspension bridge – the design elements can be accentuated appropriately using light. This also creates a characteristic appearance at night which is visible from afar.

Due to the often slender shape of the construction component, focused light with narrow beams is more suited than wide beam light distributions to emphasise the supporting framework using grazing light. Precise lighting technology helps reduce spill light to a minimum. A meticulous arrangement and exact alignment of the luminaires contributes to decreasing the light emissions into the sky in the interest of a Dark Sky concept. Accentuating cable constructions is a particular challenge due to the minimal material diameter. Often, it proves more effective in such cases to illuminate the primary supporting framework, as more light reflects off bigger structural members. Bridges above water make for fascinating views when their illuminated structure is reflected in the water. The classic traffic and pathway lighting on the bridge ensures sufficient horizontal illuminances with pleasant visual comfort for drivers, cyclists and pedestrians. Exposed luminaire positions on bridges may be problematic in terms of maintenance. In addition to selecting the best possible mounting location, long-life and completely maintenance-free lamps such as LEDs help keep the maintenance costs to a minimum.

For effective lighting of the water flowing over the dams, the designers opted for Beamer projectors directed downwards. The lighting effect at night turns the rapids into an attraction for both the residents and tourists.



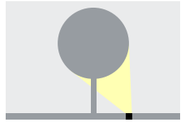
Lenses and filters in the Beamer projectors are protected inside the housing. The scaled hinge helps in the alignment of a row of luminaires to the exact same degree. The precise lighting technology and narrow beams prevent spill light, while the smooth housing minimises the accumulation of dirt.

Thanks to a wide range of accessories, the Beamer projectors can be mounted in various places – e.g. on masts for accentuation of the pathway or cycle route.

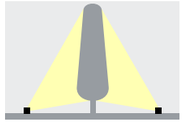
Situations
Vegetation

The design and presentation of vegetation is an essential element of landscape architecture, with trees being a key feature used to structure space. Since the shape and size of the trunk and the canopy vary depending on the type of tree, both require specific lighting solutions. The most well-known shapes of tree include spherical, columnar, umbrella and palm shaped. Illuminating the tree from more than one side using wide-beam light distributions ensures uniform brightness from every angle. Where the tree is illuminated from opposite sides, the composition of light and shadow on the canopy can provide a modelling effect. Uplights near the trunk, on the other hand, accentuate it as a linear element and visually connect the canopy with the ground. If trees are planted in a grid formation and are illuminated using uplights with wide-beam light distribution, the underside of the treetops can produce the effect of an illuminated roof. Focused zenithal light such as from projectors mounted high on a building can create the impression of moonlight. Depending on the time of the year, the light can be used to emphasise the contour of the foliated canopies or, in winter, project the branch structure on the ground.

Luminaires that produce glare due to excessive luminance contrasts with the surrounding area at night reduce perception and spoil the enjoyment of the environment. Luminaires which might be overgrown by ground vegetation can be mounted on upright supporting poles to avoid this problem. Recessed in-ground luminaires, on the other hand, integrate more seamlessly into the landscape.

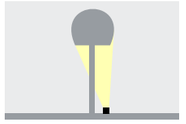


When illuminating trees with shallow roots, recessed in-ground luminaires can be installed beyond the range of the canopy to prevent damage to the roots.

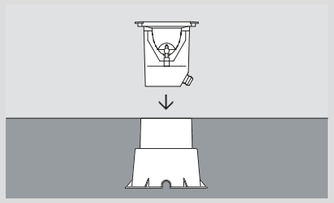


Light shining from opposite sides means strong contrasts for intense modelling of the trees compared to even illumination from all four sides.

Uplights with wide-beam light distribution for umbrella-like trees give canopies the effect of an illuminated roof.

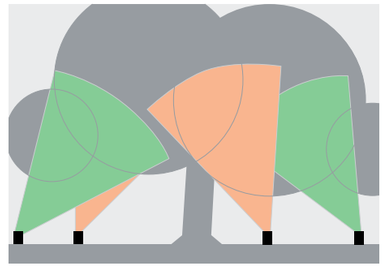


Uplights near the trunk accentuate the tree as a linear, vertical element. Illuminating trees arranged in a grid produces a rhythmic effect.

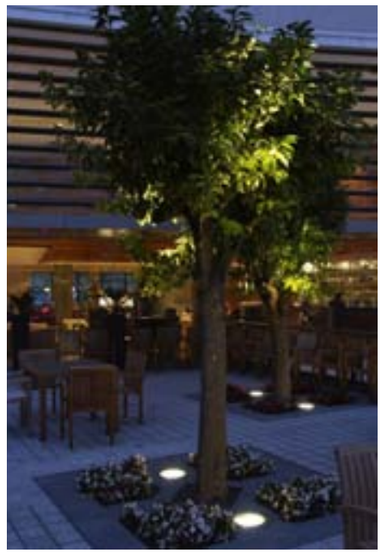


Recessed in-ground housings
Many outdoor situations, such as the installation of luminaires in the ground, require housings for the recessed luminaires. The recessed housing makes it possible to mount the luminaire securely on a foundation for accurate levelling. Ground work such as paving can be completed before the luminaire itself is installed.

Large trees or groups of trees usually require several luminaires for uniform illumination. Other factors influencing the arrangement and alignment of the luminaires include the growth of the tree and the glare protection for people passing by.



Colour filters can be used to add special effects to the illumination of landscapes. Coloured light can change the appearance of trees from warm autumn colours to an icy blue.



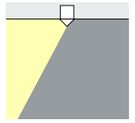
Varychrome luminaires based on RGB colour mixing technology in combination with lighting controls enable concepts that play with the dynamics of coloured light and put the atmosphere into a state of flux.

Situations
Leisure pools

In line with the general wellness trend, light in swimming pools is no longer merely functional, but instead is used increasingly as a means to create a variety of atmospheres: diffuse light produces a calm and relaxing atmosphere with few shadows and contrasts. Directed light, on the other hand, is similar to the sun at the seaside, resulting in hard shadows and creating interesting contrasts that seem to energise the environment. Lighting effects with colour and vitality, e.g. in analogy to a sunset, produce a highly atmospheric and narrative dimension. The reflecting surface of the water contributes to the vivid play of light in the swimming and leisure facilities. Luminaires with glare control and a carefully planned luminaire arrangement prevent excessive reflection on the water surface. The requirement of high-quality housings and appropriate protection modes suggests lighting tools in swimming pools that are also used outdoors. Maintenance costs can be reduced by using luminaires which are installed in favourable locations, but also by using long-life and even maintenance-free lamps such as metal halide lamps or LEDs.

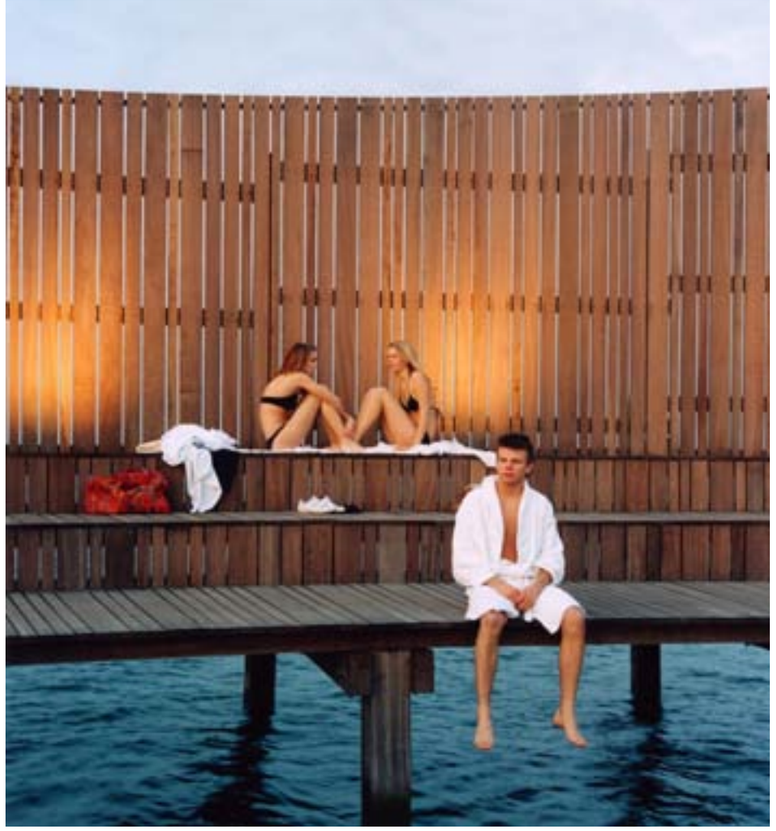
Lighting solutions for leisure pools require robust lighting tools as used in outdoor areas. A high protection mode and perfect sealing even after repeated lamp replacement are central criteria for the selection of luminaires.

Vertical illuminance in an access and lounger zone: the wallwashing makes the room look bright and wide, contributes to diffuse, glare-free ambient lighting of natural colour which is the antithesis to the active lighting effects on the opposite wall.



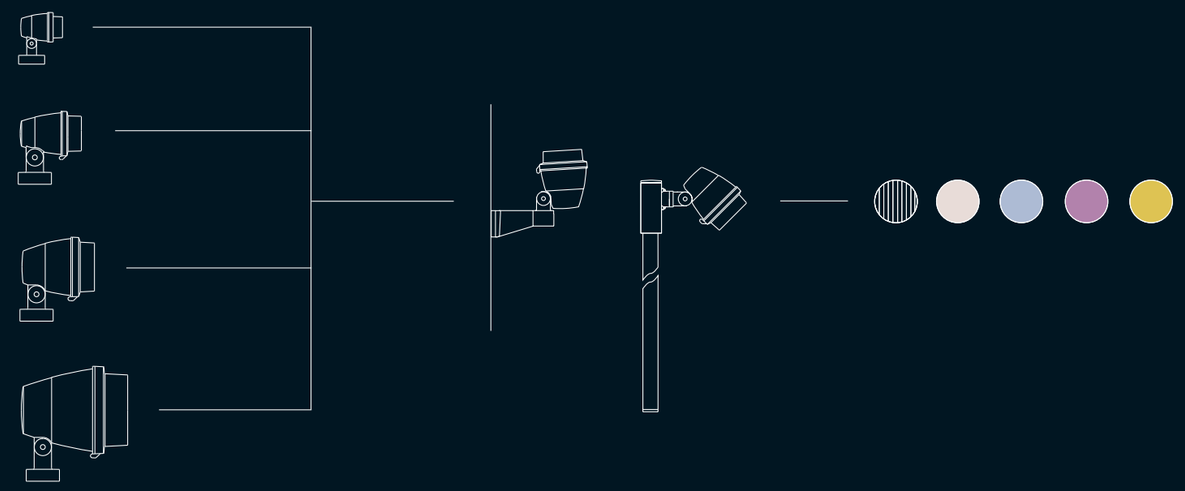
The striking definition of lighting zones in a leisure pool helps structure the artificial environment to provide a true experience. To do this, the lighting designer requires a comprehensive toolkit with a wide range of lighting tools.

ERCO's luminaires are both functional and aesthetic products designed for long life. Even in extreme environmental conditions demanding high standards of corrosion protection, perfect sealing and safety, these lighting tools remain highly reliable.



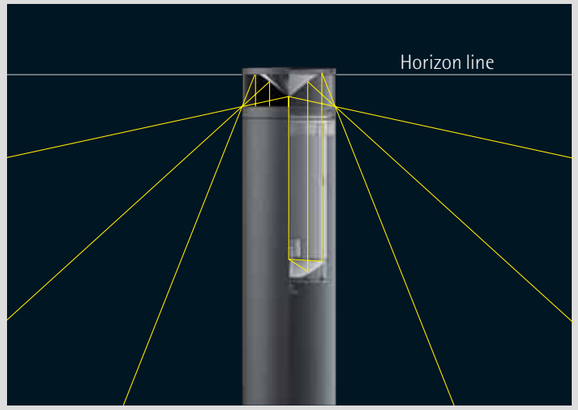
Lighting tools
ERCO system design

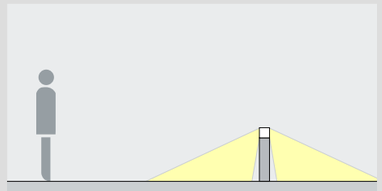
Whether it is for unique buildings, private gardens or entire landscapes and urban space: professional lighting design requires not so much individual decorative products rather than a coherent tool kit for lighting design. ERCO's product range provides efficiency not only through lamps and control gear which are future-proof, but also by providing the optimal, and accordingly effective, lighting technology for a wide range of differentiated applications. The systematic combination of different light distributions and mounting options results in significantly greater creative scope for the designer.



Lighting tools
Technical characteristics

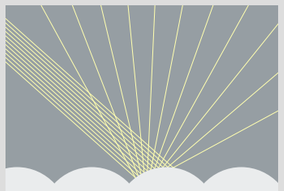
Dark Sky technology
Dark Sky technology ensures that light is only directed where it is intended - in the interest of both people and the environment. Luminaires suitable for Dark Sky applications feature precise light control and a defined cut-off for optimal visual comfort. Emitting no light above the horizontal plane is a definitive criterion for outdoor luminaires. At night, low light aperture brightness of the luminaire prevents excessive luminance contrasts. Dark Sky requires an effective design concept with a suitable luminaire technology. Careful selection, installation and alignment of the luminaires provide the basis for an effective "Dark Sky" project. This approach to design helps to save energy otherwise wasted on producing ineffective light, optimises orientation, prevents impairment of the biorhythms of nocturnal wildlife and, ultimately, ensures that the starry sky remains visible to humans.



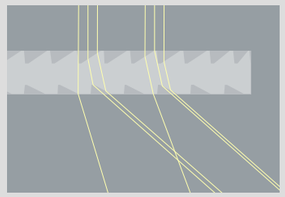


The precise light control of Panorama bollard luminaires, for example, prevents light emissions above the horizontal plane in order to meet the Dark Sky requirements.

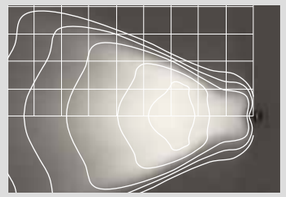
Reflector and lens technology
The development and production of lighting systems consisting of reflectors and lenses is one of ERCO's core competences. Based on complex calculations and computer simulations, our design engineers have devised optical elements that ensure optimal light distribution for a wide range of lighting tasks. This ranges from exceptionally uniform projection beams without striations but with a continuous, slightly soft edge for accent lighting to highly asymmetrical light distributions for the uniform washlighting of vertical surfaces. This high quality standard could only be achieved following decades of experience, the use of cutting-edge computer technologies and clear communication channels between research, design, tool construction and production, all of which are housed below ERCO's roof.



Spherolit reflectors
The optical principle of the Spherolit reflector: Depending on the convex shape used in each individual sub area, the incident light reflected off them is spread accurately. The reflector characteristic can thus be controlled from narrow spot to wide flood.

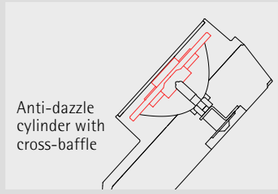


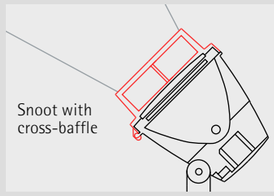
Lens systems
Special, computer-calculated microstructures in the lenses made of transparent plastic provide the design engineers with new options to match the light distribution exactly to the appropriate application.

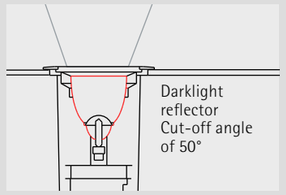


Light distribution
The more specific the light distribution of a lighting tool is designed to meet the requirements of the application, the more efficient it is in fulfilling its task. This is why ERCO provides a highly differentiated range of products with a wide spectrum of light distributions.

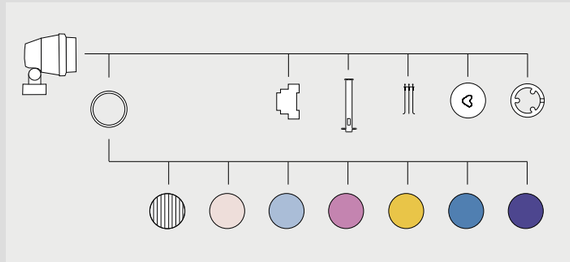
Glare control
To ensure efficient visual comfort in outdoor areas, ERCO provides differentiated solutions to control glare without diminishing the lighting effect. Anti-dazzle cylinders or cross-baffles conceal the lamp in the projector to prevent direct glare. Darklight reflectors in downlights or recessed floor uplights, for example, ensure that provided a person is outside the cut-off angle they will be protected from glare resulting from reflector luminances.







Accessories
Logical system design is a characteristic of ERCO's lighting equipment. We never develop products in isolation but always design entire product ranges that are clearly positioned within the well-defined overall structure. This includes using versatile system accessories to adapt the lighting tools to suit particular requirements – from lenses and colour filters to mounting equipment. Accessories such as upright supporting tubes and cantilever arms as well as variants with brackets ensure the universal suitability of the luminaires: in open areas, on poles, ceilings or facades.



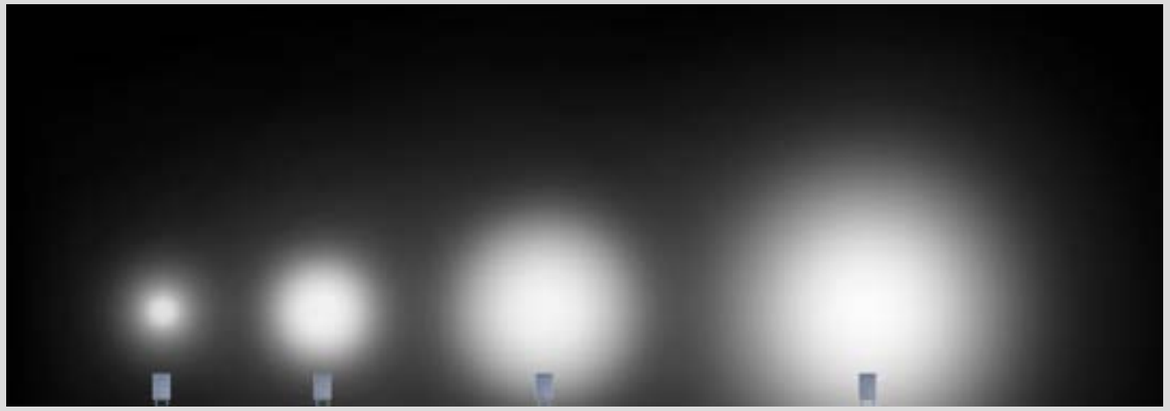
Luminaire quality for outdoor areas
ERCO outdoor luminaires consist of corrosions-resistant cast aluminium. The No Rinse treatment improves the subsurface for subsequent powder coating. Double powder coating further guarantees a high resistance to weathering, excellent mechanical stability and good corrosion protection. The housing form and surface are optimised for reduced dirt accumulation. The different protection modes classify the impermeability to dust and water: IP65 protection is against strong jets of water from all directions, IP67 is against the results of temporary immersion, and IP68 is against the results of continuous submersion up to the specified depth. The approval mark further indicates different technical standards of certain regions.

No Rinse

IP65
IP67
IP68

Lighting tools
Modular light characteristics

Powercast is a universal range of economic lighting tools for outdoor applications. The projectors and floodlights feature cutting-edge technologies including LEDs and Spherolit reflectors for efficient visual comfort. The system design with a uniform housing shape produces symmetrical light distributions for narrow spot to wide flood accent lighting, but also various wide beam light distribution patterns. Powercast is a highly versatile, cost-effective and flexible range of luminaires used, ideal for the illumination of complex facades, signs or vegetation.

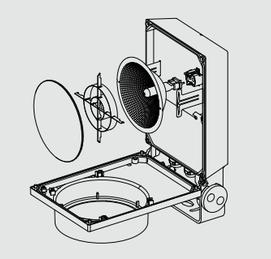


Narrow spot
To accentuate smaller objects with high illuminance or to cover considerable distances between luminaire and object.
Beam angle < 10°.

Spot
The standard characteristic to accentuate all kinds of objects, specifically to model the three-dimensional shape.
Beam angle 10°–20°.

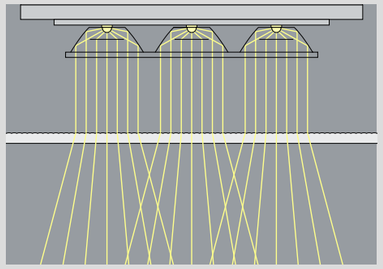
Flood
For efficient accent light on larger objects or for wider spread lighting of areas of a room.
Beam angle 25°–35°.

Wide flood
To provide flexible floodlighting for surfaces and areas of a room.
Beam angle > 45°.



The housing swings open for easy lamp or reflector replacement. The Spherolit reflector can be exchanged without using tools.

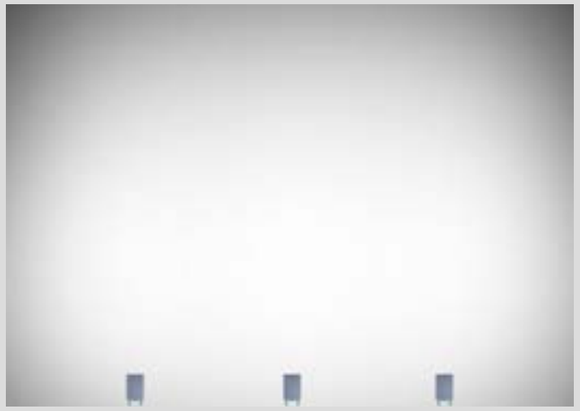
Powercast with LED
As a particularly low-maintenance and energy-efficient version, Powercast projectors are also available with LED technology in warm white and daylight white light colour. Optimal lighting control is ensured by lens systems consisting of a specially developed collimator and different lenses for spot, flood and wide flood.



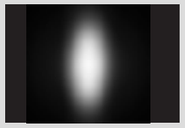
Light control
Calculated and produced by ERCO, the collimator initially directs the light in a parallel beam. A transparent plastic Spherolit lens precisely creates the required beam angle.

Daylight white
Powercast projectors in daylight white of 5500K provide superior efficiency with acceptable colour rendition. The light colour is similar to daylight.

Warm white
In warm white, Powercast projectors have a somewhat lower light output than in daylight white, but better colour rendition. The light colour of 3500K closely approximates the light of halogen lamps.



Oval flood
To provide floodlighting for surfaces and objects. The oval-shaped beam can be rotated for vertical or horizontal light distribution.



For greater flexibility in practical applications, the Spherolit reflector oval flood can be rotated through 360° and fixed at each axial position. Similar to the use of a sculpture lens, the oval-shaped beam can be aligned for optimal illumination of the object.

To provide a soft gradient, the floodlight with Spherolit reflector oval flood up to 150W is available with a Softec lens as an accessory.

Washlight
Wide-beam, asymmetrical light distribution for floodlighting vertical surfaces such as facades, walls or hedges.

Floodlights with Spherolit reflector washlight up to 70W are equipped with a Softec lens.

Lighting tools
Summary

In order to make it easy to find the right lighting tools for a specific lighting task in outdoor areas, ERCO's outdoor range is divided into luminaire types and product groups. The following summary identifies the different types and their product groups listing the light intensity distributions available. The individual groups with their specific characteristics and features are briefly introduced on the following pages. Full, up-to-date product information is available online in ERCO's Light Scout:

www.erco.com/produkte

The light beams shown in yellow on a grey background indicate the direction of the light and the light distribution of the luminaire. These characteristics symbols are standardised throughout all ERCO media – for quick and reliable luminaire selection.

Projectors and floodlights

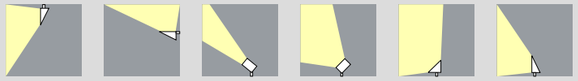

Powercast


Grasshopper


Beamer


Focalflood


Parscoop



Facade luminaires


Kubus


Axis Walklight

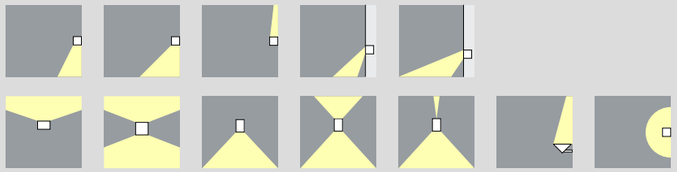

Visor


Lightmark


Cylinder facade luminaires


Focalflood facade luminaires


Site



Open area luminaires


Kubus


Visor


Midipoll


Panorama

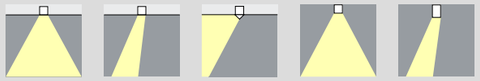

Lightmark

Ceiling luminaires


Lightcast recessed ceiling luminaires


Paratec


Cylinder



Recessed floor luminaires


Tesis


Tesis


LED orientation luminaires IP68

available in varychrome technology

Lighting tools
Projectors

Powercast

The Powercast product group combines economic efficiency with flexibility in use. The most noteworthy feature is the selection of modern lamp types including LEDs, metal halide lamps and low-voltage halogen lamps along with a multitude of different light distributions.

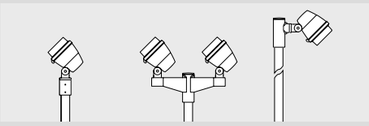
Powercast projectors for metal halide lamps or low-voltage halogen lamps are available with Spherolit reflector in 4 beam directions, from narrow spot to wide flood, the projectors with LED in 3 light distributions, from spot to wide flood.

Grasshopper

Due to its compact housing design, the Grasshopper luminaire is suitable for discreet applications to accentuate facade details, trees and plants. Efficient, maintenance-free LEDs or long-life HIT lamps ensure versatile mounting options.

Beamer

The powerful Beamer projectors are suitable for demanding outdoor lighting concepts and ensure excellent visual comfort due to the internal cross-baffle which provides anti-glare protection. The integrated accessory slot provides the option of using lenses and colour filters.



Mounting accessories
Beamer, Focalflood and Parscoop have a common, comprehensive range of mounting accessories for optimal mounting positions, either on the building itself or on the site.

Lighting tools
Floodlights

Powercast

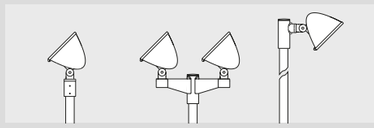
The floodlights in the Powercast range generate an asymmetrical light distribution due to the use of special Spherolit reflectors. These are available with metal halide lamps and low-voltage halogen lamps. The reflector can be rotated through 360° and fixed at 90° positions.

Oval flood
To provide floodlighting for surfaces and objects. The oval-shaped beam can be rotated for vertical or horizontal light distribution.

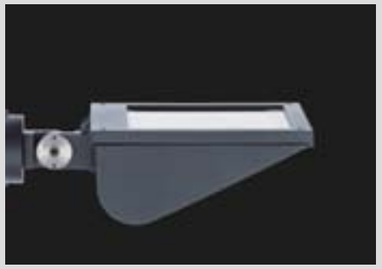
Washlight
Wide-beam, asymmetrical light distribution for floodlighting vertical surfaces such as facades, walls or hedges.

Focalflood

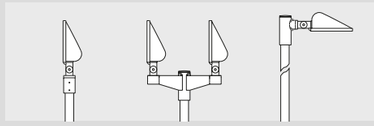
The Focalflood range of floodlights is characterised by horizontal light distributions with a focal point. This allows the luminaire to be placed closer to the surfaces to be illuminated. The range uses the common variety of mounting accessories for outdoor luminaires.



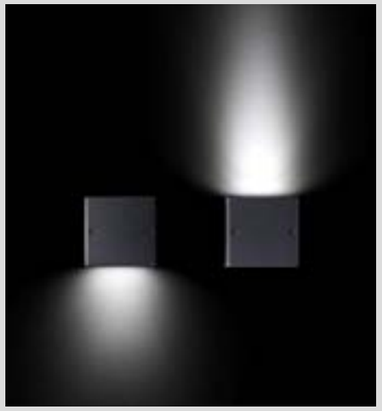
Parscoop



Due to their uniform, asymmetrical light distribution, the Parscoop floodlights are perfect for ceiling and wall washlighting. The range is highly versatile due to its variety of housing sizes and lamps as well as a wide range of accessories.



Kubus



The Kubus facade luminaire is the ideal lighting solution for a discreet identification of details and entrances. The HIT lamp spreads its light wide, while the LED version produces grazing light directed over the facade.

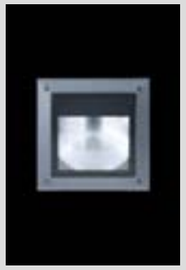
The two floor washlight lighting technologies meet different demands: the long, oval light beam for pathway lighting creates a band of light along the path; with open area lighting, the beam is directed onto a larger area in front of the wall.

The pathway luminaire is available with appropriate recessed wall housing for flush mounting.

Axis

The Axis Walklight with highly efficient, maintenance-free LED technology is a DALI-compatible stair and floor luminaire. Because the direct component of the light is shielded, it ensures optimal visual comfort.

Visor
Lightmark



The Visor and Lightmark ranges of floor washlights include luminaires for recessed facade installation with comparable lighting technology in both round and square design. Common features include excellent visual comfort due to fully shielded lamps and robust IP65 housings.

Lightmark

Lightmark facade luminaires are able to illuminate large facade surfaces above the luminaire – or with double-sided front lens, above and below the luminaire – with an attractive grazing light effect. The fully shielded lamp ensures high visual comfort.

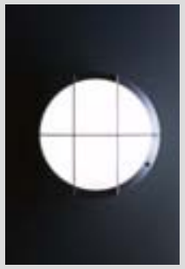
Cylinder

Cylinder facade luminaires are used both for general lighting in the direct surroundings of a building and to produce grazing light effects on the facade itself. Cylinder facade luminaires are available in three sizes, each with different lamps and characteristics.

Focalflood

Features of the Focalflood facade luminaires are high energy-efficiency and low maintenance. The DALI-compatible LED luminaire has digitally addressable control gear and a narrow-beam light distribution to ensure uniform illumination of large areas. Mounted directly onto the surface, the light grazes the wall or ceiling while reducing the light pollution to a minimum.

Site



A classic among facade luminaires established through its robust and effective construction on facades and at entrances. The diffuse light of variants whose upper half is shielded by a cover is specifically directed onto the floor.

Lighting tools
Open area luminaires

Kubus

Along with facade luminaires, the Kubus range also includes a bollard luminaire fitted with LED or HIT lamps and with Dark Sky technology for efficient open-area and pathway lighting. The robust housing made of high-quality cast aluminium is double powder-coated.

Visor

The various features of the Visor floor washlights are also found in the free-standing bollard luminaires of this product range. Depending on the lamp used, they are suitable for illuminating driveways, pathways, squares, entrances or areas near to walls.

Light distribution
Depending on the lamp, the Lightmark and Visor bollard luminaires feature lighting technology producing a wide-beam light distribution for lighting pathways, or beams that penetrate deep into an area, which are effective in illuminating open spaces such as public squares or terraces.

Midipoll

The round beam of the Midipoll is complemented by grazing light on the cross-shaped bollard profile, turning it into a space-defining element. Dark Sky technology and the use of LED and HIT lamps enhance the longevity and economic efficiency of this bollard luminaire.

Panorama

The reflector system in the Panorama emits light throughout a full 360° up to 6m deep over the area to be illuminated. Dark Sky technology reduces the glare for pedestrians and drivers to a minimum, the lamp itself is only perceptible by a slight shimmer.

Lightmark

The simple, yet striking design of the Lightmark facade luminaires is also applied to the bollard luminaires. Dark Sky technology maximises the visual comfort and prevents light from being emitted above the horizontal. With a light distribution similar to the Parscoop wallwasher, the Lightmark facade washlight is ideal for efficient vertical illumination.

Lighting tools
Ceiling luminaires

Lightcast

Downlight
The Lightcast range stands for energy-efficient general lighting for outdoor areas such as entrances or passageways. Their robust cast aluminium housing withstands even harsh environmental conditions.

Directional luminaires
Their narrow-beam light distribution is ideal to accentuate building details or sculptures. For this purpose, the lampholder carrier can be tilted by up to 15°.

Directional luminaires with sculpture lens
The sculpture lens changes the round beam into oval light to generate uniform, vertical lighting. The luminaire is ideal for washlighting outside walls.

Cylinder

This luminaire has the same features as the Lightcast range but in a cylindrical surface-mounted housing made of cast aluminium. The luminaire is primarily used for transitional areas between indoors and outdoors.

Paratec wallwashers

Available in three sizes and two colours, the housing of the Paratec projects slightly beyond the mounting plane, its asymmetrical light distribution providing uniform wallwashing starting at the ceiling. The high cut-off angle ensures excellent visual comfort.

Lighting tools
Recessed floor luminaires

Tesis IP68

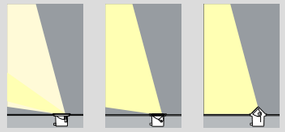
The Tesis range of recessed floor luminaires has a particularly wide selection of light distributions as well as round and square housing forms for many applications. Its protection mode IP68 indicates the high quality of its housing, with materials used including safety glass, corrosion-resistant stainless steel and cast aluminium.

Uplight
Produces precise grazing light on facades or roofs illuminated from below, with perfect glare control due to Darklight technology.

Uplight, adjustable
For precise grazing light on facades or objects. The adjustable uplight combines a shallow recess depth with high visual comfort.

Directional luminaires
Directed light for accentuation of objects, undergrowth and building details.

Wallwashers
The Tesis range comprises three different types of wallwasher: the Tesis focal wallwasher produces a focal emphasis on vertical surfaces; the Tesis lens wallwasher ensures highly uniform facade illumination; the Tesis wallwasher has a special light distribution which allows the beam to intersect with the facade directly above the ground.



LED luminaire
The maintenance-free and energy-efficient orientation luminaires with LEDs are available in warm white, daylight white and in varychrome.

LED orientation luminaires

The white or coloured orientation luminaires clearly mark out pathways and open areas. Scratch-resistant glass and stainless steel ensure that the luminaires remain problem-free for many years. The use of diffusors and refractors ensure that they are highly visible even in bright surroundings. The floor washlights in the range produce a direct, asymmetrical light distribution.

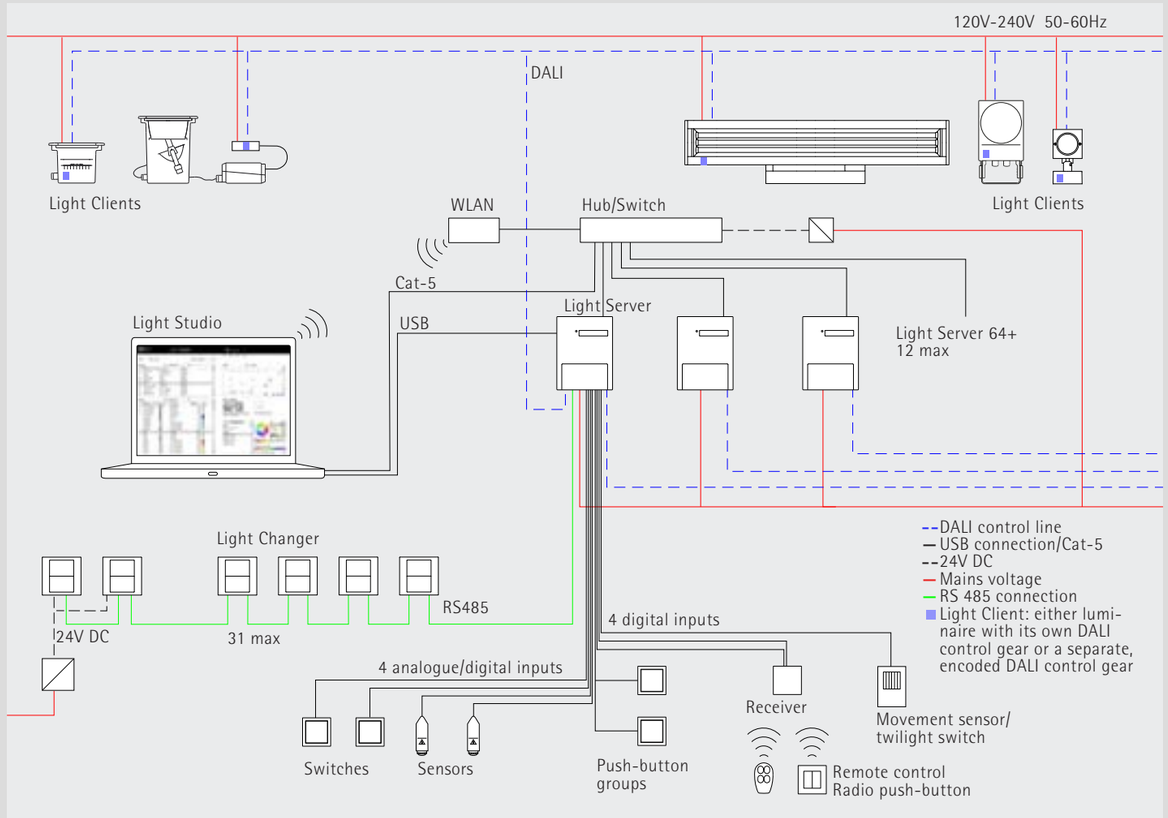
Lighting tools
Lighting controls

The ERCO Light System DALI brings an innovative approach to lighting control: intelligently applied DALI (Digital Addressable Lighting Interface) technology for individually addressable luminaires. Combined with the ERCO Light Studio software, it forms an integrated system for scenographic lighting. Together with the comprehensive range of DALI-compatible ERCO luminaires for the indoor and outdoor area and the ERCO DALI track, this allows the full potential of lighting control to be used in practice more simply and economically than ever before. This applies both to scenographic lighting effects and to intelligent light management where it saves energy. It is far easier to install than other lighting control technology – DALI technology integrates switch and dimming functions in the luminaire or the control gear, while the two-core control line means that it can be connected in any topology. The power supply to the luminaires remains constant and is independent from the DALI connection.

Light Server, Light Studio
The Light Studio is the central control software used to control the Light Server as the interface between the software and the luminaires. The program is divided into four modules, which cover all lighting control applications.

Light Clients with ID
All DALI-compatible ERCO luminaires are pre-programmed with a factory-set code. This allows them to be automatically recognised by Light System DALI. In combination with ERCO Light Clients, Light System DALI offers a genuine "plug and play" connectivity for quick and reliable installation and commissioning.

DALI PLUG+ PLAY



ERCO Showrooms

Experiencing light and using services – worldwide

ERCO is a cosmopolitan, globally active company. ERCO showrooms and offices can be found in all major markets. Here, our well-educated, specially trained employees work as lighting advisors. This worldwide network ensures reliable service and competent, on-site support especially on international projects: from providing advice during the planning stage, tendering, sample supply and project planning to customer service and training.

"Consultant to the consultant" – this is how ERCO lighting advisors see their role in the building process: they provide professional support to designers in all matters relating to lighting technology and in each individual project phase. With case-related specialist information and customised product documentation they help customers to make the correct decision when selecting lighting equipment.

The showrooms and offices provide ideal facilities for meetings during the project phase. Each has a mock-up section for sample and other product demonstrations. Many of the showrooms also have outdoor areas in which to demonstrate ERCO lighting equipment for such applications.

The fact is that ERCO's service does not end with punctual delivery of the products: after commissioning the system, our lighting advisors support customers in word and deed. This may involve additional equipment or by lending a helping hand when it comes to positioning and focusing luminaires correctly.

Events and seminars
These turn ERCO showrooms into meeting places for the local light and architecture scene. The showroom is designed to make it possible to explain "tune the light": to design the qualities of light in terms of time and space.

Light qualities
Experiencing the product variety and scope for design of ERCO's range of outdoor luminaires up close and personal: in ERCO's Light Garden (above) at its head office in Lüdenscheid, but also outside the local showrooms (right).

On site
Many issues only emerge during the building process and require site meetings. ERCO employees help to organise sample products, provide assistance on lighting technology issues and solve logistical problems.

Light in space
The effect of light in space is difficult to express in words – it must be experienced. The ERCO showrooms provide ideal, flexible facilities for such demonstrations.

Project management
The offices provide facilities for project meetings. Your ERCO contact is trained to support clients through all the stages of a project.

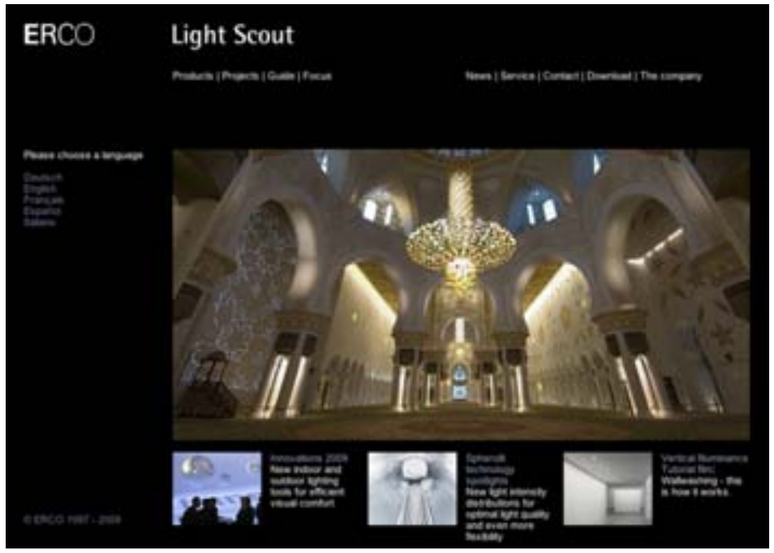
Contact
The ERCO staff all around the world look forward to getting to know you. You will find the addresses of our offices and showrooms at the end of this brochure and at:

www.erco.com/contact

Information logistics
Products – Projects – Guide

To provide designers with optimum support at every stage of their work, ERCO offers a multitude of both classic and digital media. Our extensive range of material is divided into information on products and reference projects and into didactic subject matters.

All ERCO documents have been designed to perfectly complement the design of coherent and uniform lighting concepts. The layout, structure and terminology of the various areas of the product range have been harmonised to make orientation as easy as possible for users.



www.erco.com
The ERCO Light Scout on the Internet is the leading medium in terms of up-to-date product information. The "Product" area of the Light Scout and the PDF format product specification sheets are both updated twice a year. Light Scout meets the requirements of a globalised market place with product information in thirteen versions for different languages and regions and with Internet navigation in five languages.

Projects
Much space in ERCO communications is devoted to fascinating light in architectural applications – examples include the "Projects" area of the ERCO Light Scout and our magazine "ERCO Lichtbericht".

Guide
Interactive knowledge-based modules in the "Guide" area of the Light Scout cover the fundamentals of designing with light and provide user information on lighting tools.

Products
Our extensive range of lighting solutions for architectural applications is divided into the three product ranges lighting controls, indoor luminaires and outdoor luminaires. This structure is repeated in both the Light Scout and the printed catalogue.

The "ERCO Program" printed catalogue contains all the important information and design data – in black and white, compact and always accessible.

In the Light Scout, information on each ERCO article is available to be downloaded with comprehensive digital design data for use in CAD, light calculation and light simulation software. The data can be used, for example, to create impressive visualisations in DIALux or 3D Studio VIZ.

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