

Office worlds in transition

Knowledge work and office lighting

Technological and social developments determine our work methods – and therefore the appearance of offices. Knowledge work in the digital information society with its complex, frequently self-organised and constantly changing work sequences demands high levels of flexibility. For this reason the requirements made on floor layouts, furniture and lighting in offices are completely different from the world of work fifty years ago that functioned mainly with paper rather than digitally. The increasingly dynamic scheduling and complexity of digital processes demands highly concentrated dialogue- and project-orientated work with people and their needs at the centre. Not only office users but also building engineers need to respond to this and light is an essential component in providing people with productive and pleasant work surroundings.



The 1990s: horizontal and vertical visual tasks

Computers with increasingly rapid operation revolutionised not just the method and speed of data processing but also communication in offices. Even though a large part of documentation was still paper-based in the early era of digitalisation, the appearance of offices fundamentally changed. In addition to horizontal visual tasks for the processing of printed documents, vertically aligned, highly reflective screens now placed demands on the glare control of luminaires, whilst storage space for paper documents

decreased. Economic pressure also increased due to globalisation and with this the demands made on productivity and the spirit of innovation. Simultaneously, awareness increased for the responsible handling of natural resources and the importance of a high quality of wellbeing for efficient work.



The 1970s: horizontal visual tasks

Processes and communication based on printed documents characterised work in offices over a long period, with employees processing information manually and storing it in filing systems. Visual tasks were focused on horizontal planes – small details such as hand-written information had to

be clearly legible. The use of high quantities of fluorescent lamps achieved the required illuminance levels throughout the office and during planning the office quality took a back seat to the efficient utilisation of the space – large offices with flat illumination were the standard.

Today: differentiated visual tasks

Contemporary office work is no longer bound to specific locations and times due to the digital networking of data and communication. However, due to the increasing pressure of innovation, analogue work on drawing boards and whiteboards as well as places for creative discussions remain relevant. Interior design responds to this transition by designing modern offices as hybrid spaces, and a combination of traditional office struc-

tures and comfortable atmospheres promotes collaborative work. Processes, documents and knowledge management are digitally organised. Illuminated screens and both horizontal and vertical display surfaces move the focus and office lighting moves away from pure workstation lighting to differentiated architectural lighting with high visual comfort that assumes a variety of functions.



Corporate lighting: creating brands with light

In the race for qualified employees, offices are not only spaces complying with the functional demands of productive work – the architecture represents the company as a brand by reflecting its attitude to employees and customers. Workstations, relaxation areas and prestigious zones all have the same level of importance and increasingly flow together. Area design is implemented accordingly, i.e. interior design and lighting within individual zones according to the specifically desired function. This perception-orientated method of design demands high quality of light in all areas and thanks to specific lighting levels precisely matched to the utilisation is more cost-efficient alternative compared to flat lighting across the whole area.



Visual comfort at work

The demands on work in our specialised knowledge society are increasing, whilst work processes become increasingly interdisciplinary and networked. As a consequence, office work is developing away from constant work at specific workstations to a more spatially flexible sequence of different activities – meetings, presentations, work within teams and single quiet areas require differentiated spatial structures and individual lighting. A sense of wellbeing is not only achieved by comfortable, ergonomic interiors – light is less obvious but just as relevant. High visual comfort and distribution of brightness according to the activity in the space provides high visual quality and good spatial orientation, which in turn leads to concentrated, productive work.



Reliable lighting solutions

Due to the need to keep maintenance and energy costs low in office construction projects, qualitative parameters are often neglected in planning decisions. The demand for energy efficiency is closely linked to the lighting concept itself and cannot be randomly derived from specifications on product data sheets, but requires individual lighting calculations. Perception-orientated lighting design for example saves energy by ensuring that light is emitted precisely onto the required area instead of simply floodlighting the room. Also important are manufacturer specifications for lumen maintenance and operating time, as these influence sound statements concerning long-term maintenance costs and future investments.

Office design in practice

Five parameters for selecting luminaires

Concentrated work requires appealing work surroundings with high visual comfort. For each project it is essential to consider the quality of light, but when specifying luminaires aspects such as long-term cost-efficiency are also very important. The aims of employees, companies, operators and designers far exceed this and architects, lighting designers and electrical contractors appreciate extensive ERCO services ranging from concept support to on-time delivery. The efficiency of a lighting installation is particularly relevant for operators, whereas employees appreciate product quality where flicker-free light and dimming provide comfort at their place of work. From the company's point of view, lighting enables far more than just traditional visual tasks if it is transformed into corporate lighting as a component of brand communication – as achieved by ERCO in many projects around the world.

For more office projects see:
www.ercocompany.com/work



Quality of light

The headquarters of Mace in London creates a prestigious reception with wallwashing and high quality of light – uniform distribution of brightness, colour consistency of the LEDs and high-quality product details achieve a striking brand presence for Mace.

Efficiency

Contemporary office lighting with ERCO lighting tools brings together efficiency with maximum visual comfort for variable work situations. In the logistics centre of the internationally active distributor and airport retailer Gebr. Heinemann in Hamburg, the suitable illuminance values and optimum glare reduction of compact ERCO LED downlights help to create a pleasant working environment.



Product quality

Outstanding product quality succeeds in applications ranging from open-plan offices to working at home – and LED control gears and lenses developed in-house by ERCO, contribute significantly to the ergonomics. Users can work comfortably with flicker-free light with uniform distribution and dimming from 100% down to 1% via push-button.



Flexibility

The example of the Engel & Völker Market Center in Madrid demonstrates that flexibility and efficient ERCO lighting tools pay off several times over: for global companies with local subsidiaries that rapidly change and expand, a flexible infrastructure with track is a sustainable solution. Luminaires can be simply repositioned or taken to the next larger location.

Identity

Good office lighting supports identity both for customers and employees and with individual lighting concepts it makes the most out of prestigious corporate spaces such as those of Bodega Portia, designed by Foster + Partners. Pleasant workstation lighting expresses a sense of esteem for employees and supports them in identifying with their company.



Lighting functions

Which functions does light fulfil in office buildings?

Office lighting needs to satisfy a variety of requirements – in each project designers are faced with the challenge of bringing together standard specifications, economic targets, organisational framework conditions and design aspects into a single lighting concept.

A theoretical model of lighting functions helps to evaluate the quality of lighting not just according to purely quantitative criteria such as illuminance or energy efficiency figures. It distances lighting from the static room cubature to focus on the utilisation of a spatial situation, both the interior as well as facades and the exterior. This form of zoning allows individual tasks to be identified: should a spatial area serve a representative role, provide guidance, make concentrated work possible, support open communication or offer inspiration and variety?

The model enables designers to flexibly respond to a high diversity of architectural situations and work methods within an increasingly dynamic world of work, as well as modularly grouping lighting tasks and scaling spatial areas according to needs. It therefore provides the ideal basis for qualitative, perception-orientated lighting design.

At the start of each lighting project it makes sense for lighting designers to ask the following three questions for each required functional area:

- 1 **Why do we illuminate?** Which strategic, architectural or functional meaning does the room or spatial zone have?
- 2 **What can light achieve?** Which office tasks can be supported via the lighting to optimise the room utilisation?
- 3 **How is the ideal lighting solution?** Which individual lighting strategy and methods of lighting are suitable as the basis for lighting design?



Concentrating

A clear focus is needed for the analysis of complex interrelations, coherent communication and working out innovative approaches. High visual comfort from vertical lighting and individual task-lighting provide the basis for consistent concentration and productive work.

- Vertical lighting in areas behind screens creates visually calm surroundings by reducing contrasts that in turn prevents eye fatigue.
- Horizontal lighting places focus onto the work area. Important: good glare control and correct luminaire layouts prevent disturbing reflections on digital devices and paper documents.



Representing

Facades, entrances and reception areas provide companies with the first opportunity of presenting themselves as a brand via the office architecture. Light sculpts architectural details and subtly communicates attributes such as openness and transparency. For a prestigious, inviting atmosphere a lighting concept must include both vertical lighting and accent light.

- Vertical lighting supports a sense of generosity in the reception area by lending the space distance and allowing it to be viewed from outside.
- Accent light establishes hierarchies of perception to provide orientation in large, unfamiliar spaces. It also ensures brilliant material surfaces and establishes visual references between the interior and exterior.



Communicating

Whether it's concentrated negotiations or creative brainstorming, one or several participants, at conference tables or via video conference – personal discussions enable efficient agreement processes in everyday office work. High cylindrical illuminances achieve well balanced facial brightness.

- Vertical lighting on uniformly illuminated walls creates soft, diffuse light in the space. Balanced contrasts and a defined background provide the ideal setting for video conferences.
- Horizontal general lighting with wide light distributions creates a balanced ratio of cylindrical and horizontal illuminances.



Guiding

Good orientation increases the level of acceptance of a building – as linear illumination light guides through the space and as wallwashing it creates the room borders. Vertical lighting also improves the quality of circulation areas thus promoting spontaneous, relaxed discussions between colleagues.

- Linear lighting confidently guides through open spaces and enables the precise, efficient illumination of circulation zones without impacting on adjacent work areas.
- Vertical lighting emphasises the direction of room elements and lends more width to narrow corridors. In this way a bright spatial impression is also created in areas with low daylight – a feeling of safety is communicated.



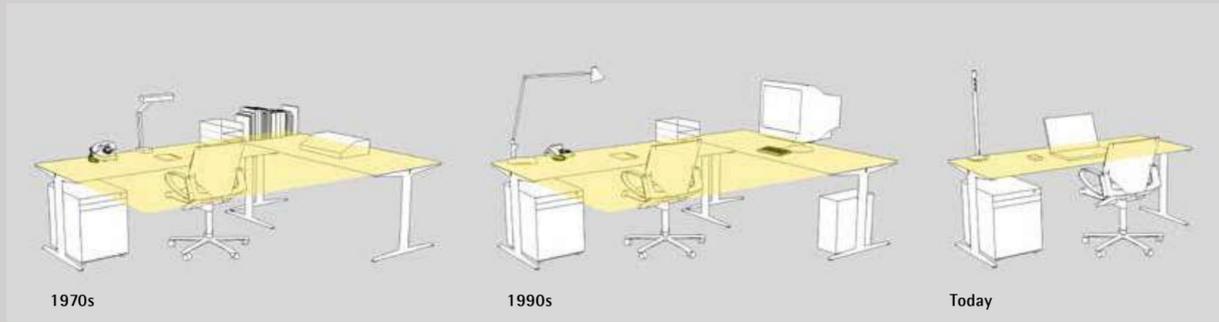
Inspiring

Offices are increasingly providing areas for seeking inspiration and gaining a change in perspective – for example with drawing tables, whiteboards, workshop equipment, reading corners, billiard tables or table tennis that enable creative breaks. Stimulating accent light forms a contrast to the uniform brightness at office workstations, helping to create more intimate areas for contemplation or intensive, creative discussions.

- Accent lighting creates private zones for undisturbed contemplation. Low general lighting and brighter zones create stimulating hierarchies of perception.

The office workstation

Criteria for workplace lighting – re-evaluated



The office workstation
Uniform horizontal desk lighting avoids strong contrasts. A horizontal surface traditionally illuminated far beyond the desk itself no longer corresponds to contemporary office workstation activities. Good lighting must fulfil the following criteria:

Despite significantly changed work processes and the era of digital lighting technology, office lighting is still often designed according to principles dating back 30 or 40 years. However, today's way of working requires an interpretation of standards and directives that either detaches itself from these traditional approaches or expands on them.

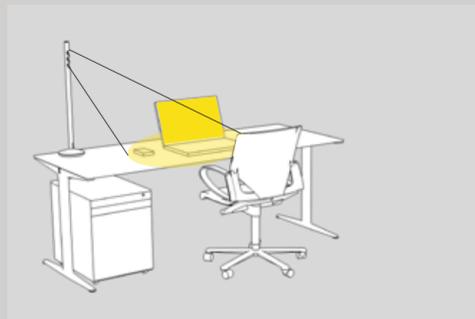
Lighting design according to office standards: derivations and challenges

Until the end of the 20th century the arrangements for filing, desk tops and typewriters for efficient, paper-dominated processes required bright, uniform lighting that extended far beyond the actual desk surface. As a result of this, a uniform carpet of light covered the rows of desks arranged in rectangular grids. With the onset of electronic data processing,

narrow distribution luminaires were increasingly installed to limit reflected glare on screens, with the narrow light beam concentrating light on horizontal planes. The disadvantage: strong shadowing and dark ceiling and wall areas impaired spatial perception and impeded the bright-dark adaptation of the eye between the screen and the surroundings. The EN 12464-1 standard valid in Europe and adapted for many countries in the world identified these risks and now specifies both qualitative and quantitative criteria for lighting. However, conventional quantitatively orientated design concepts continue to reduce office lighting to horizontal illumination and evaluating visual comfort with the UGR values in data sheets.

Requirements of tomorrow's office lighting

Equipping and organising modern office spaces is orientated to the diverse activities of their users. This approach must also be reflected by the lighting, and minimum normative standards must be taken into account concerning the planes to be illuminated, the lighting level and selection criteria for luminaires. At ERCO, people and their perception have always been focused on, meaning we manufacture office luminaires compliant to standards but we also advocate planning that generates high visual comfort via qualitative, user-centered lighting design.



Visual task at the workstation

A lighting level of 500lx is normal for office workstations, with the individual visual task not being taken into account. In many cases illuminated screens determine our everyday work. Horizontal lighting of 300lx is sufficient in such situations and this should be adaptable via a task light depending on ancillary activities and the user's vision.

Field of view during work

Quantitative office lighting is orientated to horizontal visual tasks on desks, the immediate surroundings and the background. However, this approach neglects the field of view towards vertical planes with computer work. In such cases the vertical room borders should also be taken into account to correspond to actual viewing habits.



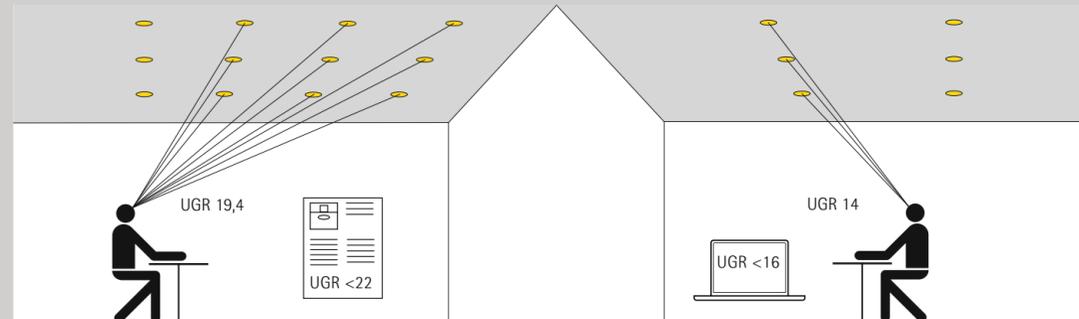
The contrast ratio to the surroundings

A balanced contrast ratio between the backlit screen and the space behind increases visual comfort in the field of view. The spill light from wide distribution general lighting is not sufficient for this – only uniform wallwashing achieves a bright, generous spatial impression.



Reflections on work equipment

Reflections from luminaires on screens, keyboards and printed media impair visual acuity and may cause fatigue and headaches. Apart from luminaire glare control, the individual, precise arrangement of luminaires is often neglected, but is decisive for avoiding reflected glare.



Glare from luminaires

Designers are able to evaluate glare in the field of view caused by luminaires using the UGR (Unified Glare Rating) procedure. The UGR value describes a specific luminaire arrangement and is not a quality criterion for individual luminaires. Important: specifications from datasheets are merely tabular values for a rectangular referential space with a uniform configuration of luminaires. Actual glare must be individually calculated according to the observation position. With good lighting design, luminaires with UGR<22 can also be used without glare in offices.

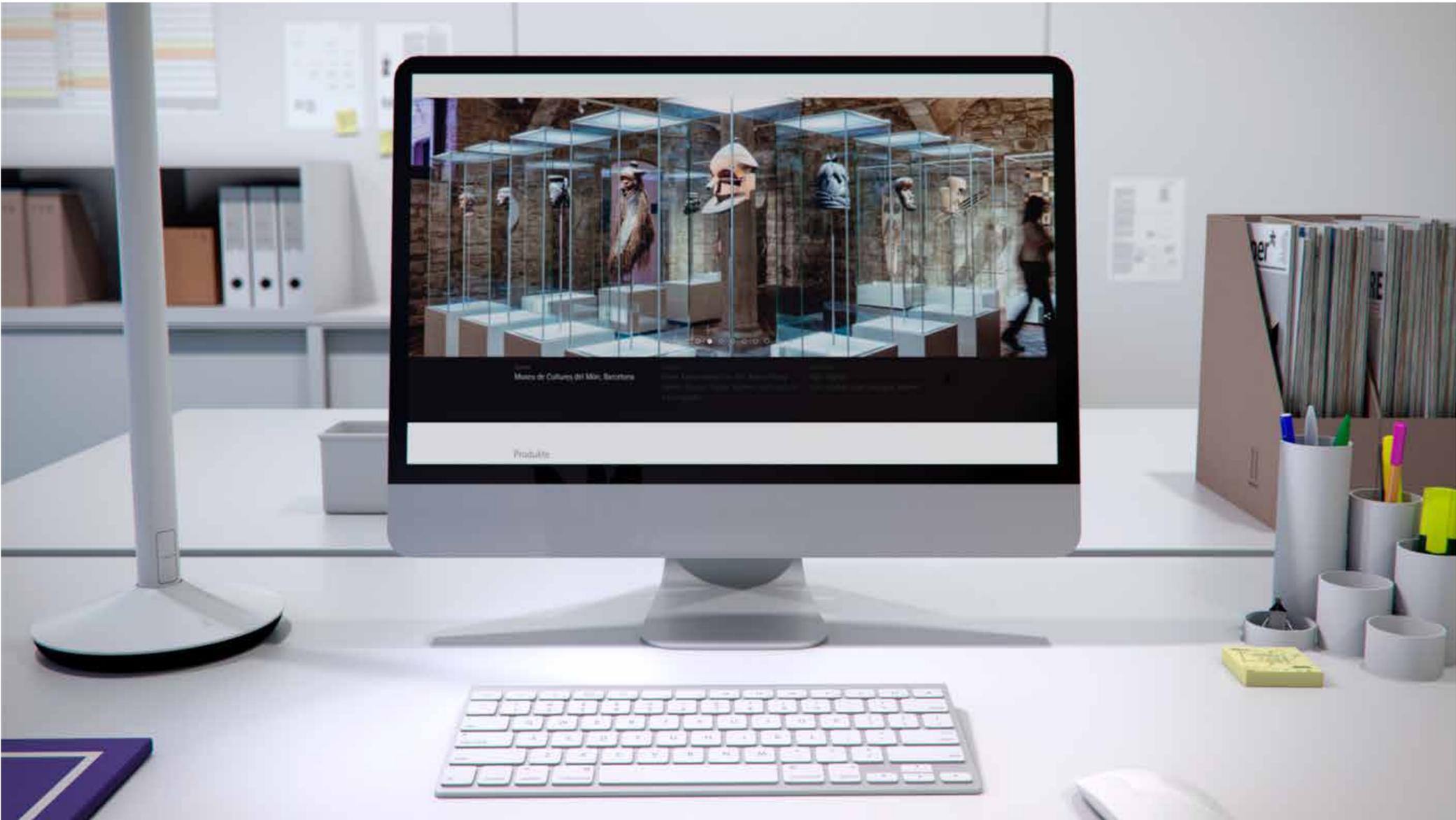
The social environment: facial recognition

Good modelling is essential for communication in offices. To achieve this, lighting must provide a compromise between high vertical illuminances in the space and good glare control in the viewing direction of the workstation. A combination of directed light and an indirect light component is ideal.



Lighting design tips for office workstations

How does light support concentrated work?



The focus of any office project is the workstation, and this is where the difference between qualitative and quantitative office planning becomes clear. Here we have compiled the most important criteria for the contemporary lighting design of workstations.

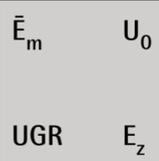
Routine activities and the analysis of complex tasks both require a clear focus. In such cases a calm environment helps, along with individually adjustable workplace lighting. Several years ago lighting design focused on the uniform distribution of brightness in the area of the horizontal working plane and its surroundings, but today a harmonious brightness distribution between the illuminated screen and its vertical surroundings is decisive for fatigue-free work on computer screens. Bright room surfaces reduce the need for adaptation to ambient brightness. When talking to colleagues or hosting video conferences, sufficient brightness on faces is also important for congenial communication.

Four lighting criteria for office workstations

Save energy via appropriate illuminances
In terms of the visual task, a monitor needs no additional lighting. Designs with a random 500lx for the complete desk are no longer appropriate, nor energy efficient. 300lx is suitable for simple activities such as taking notes. Task lights provide flexible adaptation to higher values for those with poorer vision, e.g. due to age.

Create balanced contrasts for relaxed vision

A uniformity value of 0.6 is suitable for low-contrast lighting on horizontal work planes. However, visual tasks usually focus on a uniformly backlit monitor and therefore uniform wallwashing is required for balanced brightness contrasts in the monitor surroundings.



Improve concentration with good glare control

Direct and reflected glare decrease visual comfort at office workstations. To avoid such conditions luminaires must have good glare control and must be correctly arranged. Only a simulation can verify if an arrangement complies with the specification of $UGR < 19$; values in data sheets merely refer to matrix arrangements in rectangular reference rooms.

Use vertical lighting for good facial recognition

In addition to uniform wallwashing, vertical illuminance at the place of work is also needed for good facial recognition. At least 150lx is required cylindrically at head height to ensure pleasant communication between colleagues and when hosting video conferences. In such cases the ratio of cylindrical to horizontal illuminance determines the modelling of facial features and should be between 0.3 and 0.6.

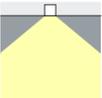


Vertical lighting
The lighting level of the background is decisive for a harmonious distribution of brightness when working on computer screens. Simultaneous wallwashing achieves visually calm surroundings for concentrated work on screens.

Horizontal lighting
Uniform horizontal lighting supplements backlit media for viewing documents on the desk for example. Good visual comfort is created by using glare-reduced luminaires arranged correctly.



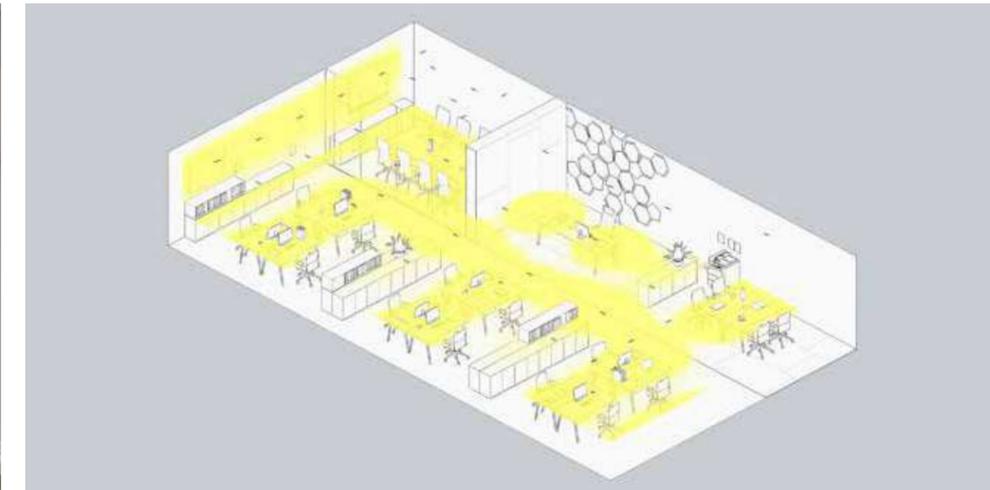
Flexible workstation lighting
Task lights enable employees to comfortably set their own lighting levels – either for reading small print or because personal preferences simply demand more light on particular days.



Lighting design by comparison

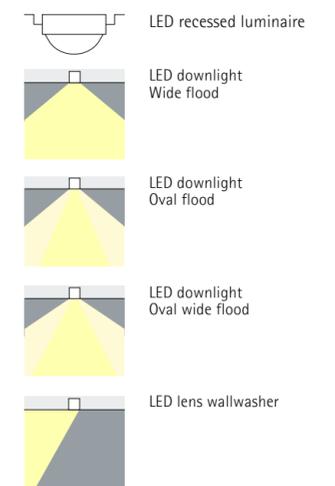
Can office lighting be attractive and cost-efficient at the same time?

Stringent specifications and traditional design approaches with only uniform general lighting without perception hierarchies, lead to unsatisfactory lighting solutions in offices. Neglecting the specific use and a bland overall impression are typical disadvantages. In contrast to such lighting concepts based on quantitative factors, perception-orientated design aims to divide the space into zones for individual needs. LED recessed luminaires with various light distributions can be positioned at specific points and achieve efficient lighting with high visual comfort due to differentiated light distributions. This approach creates lighting solutions matched to the specific visual task and spatial effect. Furthermore, illuminated vertical surfaces not only increase perceived brightness but also improve spatial perception. Using efficient lighting tools and placing importance on intelligent luminaire arrangements, creates economic lighting solutions orientated to current standards and user requirements.



Qualitative lighting design for offices

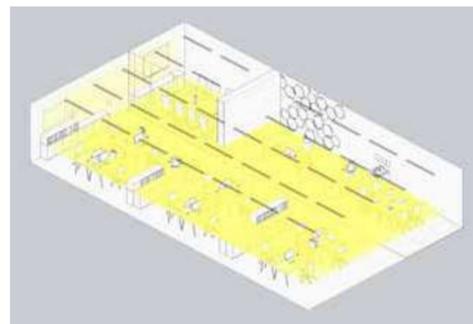
Zonal lighting analyses where the user needs light – luminaires with good glare control and simultaneously high cylindrical illuminances illuminate the workplace, enable good visual comfort and achieve good facial illumination. Illuminated vertical surfaces ensure a bright spatial impression and balanced contrast conditions for work on screens. Illumination of the circulation area in the central aisle also allows pleasant orientation.



Key figures
With nominal illuminance of at least 500lx in the workstation area:

| | |
|--------------------------------------|------|
| No. of luminaires | 32 |
| Connected load (W) | 622 |
| Wattage per area (W/m ²) | 3.93 |

Conventional lighting design for offices



LED recessed luminaire

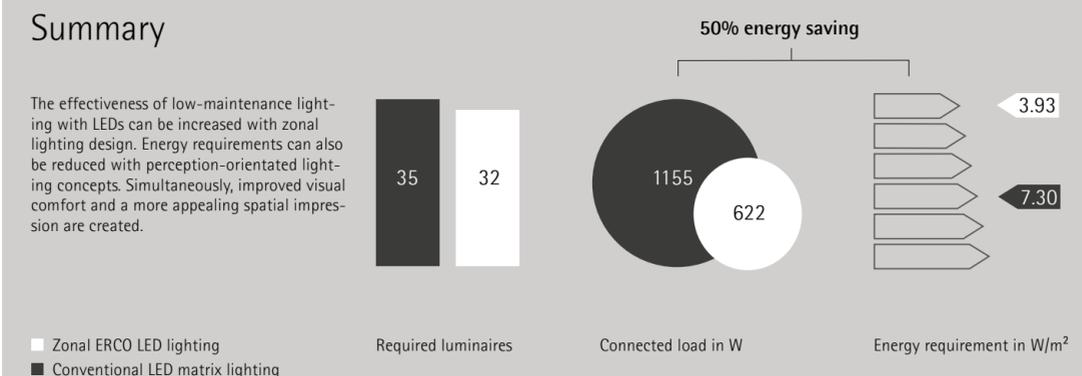
Key figures
With nominal illuminance of at least 500lx in the workstation area:

| | |
|--------------------------------------|------|
| No. of luminaires | 35 |
| Connected load (W) | 1155 |
| Wattage per area (W/m ²) | 7.30 |

A matrix solution with panel lights does not take into account the visual task of the user. Energy needs for sufficient lighting also increase and the low-contrast impression in the space appears undefined and uninteresting.

Summary

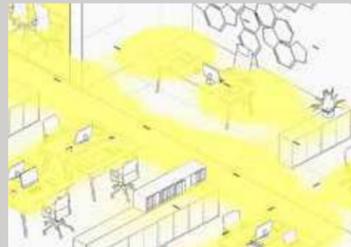
The effectiveness of low-maintenance lighting with LEDs can be increased with zonal lighting design. Energy requirements can also be reduced with perception-orientated lighting concepts. Simultaneously, improved visual comfort and a more appealing spatial impression are created.



Light is the fourth dimension of architecture

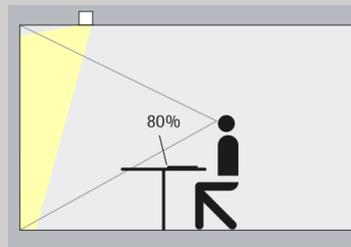
Efficient visual comfort as a strategy for office lighting

ERCO sees light as the fourth dimension of architecture. Our vision is to make a positive contribution to society and architecture. We aim to achieve this by offering lighting solutions which create high-quality work surroundings that provide visual comfort and simultaneously comply with maximum demands for resource-protecting energy efficiency. The basis for this is Efficient Visual Comfort (EVC) – our strategy for seamlessly connecting sustainable design approaches with innovative product technology. To fulfil this ambitious aspiration we have formulated five quality criteria.



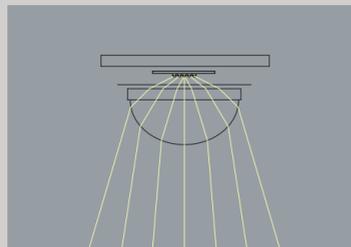
Qualitative lighting design

The fact that current office planning places employees with their specific tasks and individual needs in the centre requires a new, qualitative approach to lighting design. ERCO has been working with this idea for more than half a century – dividing a space into zones using lighting with good glare control and aligned specifically to individual tasks complies to this requirement. At the same time, all energy efficiency requirements are met.



Vertical lighting

Vertical lighting determines the spatial perception of people to 80% – and therefore influences our sensitivity to brightness much more strongly than light on horizontal planes. In areas surrounding office workstations, vertical lighting significantly increases visual comfort by balancing the contrasts between a backlit monitor and its visual surroundings, thus in turn preventing eye fatigue. In the prestigious areas of an office building it also creates an inviting, generously-dimensioned spatial impression.



Effective lighting technology

Only high-performance, precise optical systems enable zonal lighting and ERCO offers specialised light distributions within a luminaire range to illuminate only the required surfaces. Designers can also select recessed luminaires with up to five different characteristics. As a result, lighting with ERCO is particularly efficient and effective.



Intelligent control

With in-house developed control gear ERCO provides interfaces for various control technologies, such as DALI and Casambi Bluetooth. In office applications this enables the use of presence sensors for dimming or switching off the light in unoccupied rooms. Twilight switches or daylight sensors can also be integrated to enable light scenes to be called up in accordance with available levels of daylight.



Efficient LED technology

The leading role adopted by ERCO in architectural lighting with LEDs is based on the decision to expand the company's optoelectronics expertise. Due to in-house development ranging from LED PCBs and electronics to thermal management, ERCO has complete control over the features of all products. In practice this means perfect quality of light for uniform, glare-free office lighting, and lumen maintenance exceeding market standards for maximum durability.

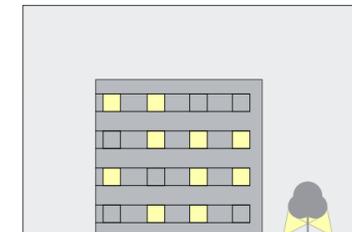
Summary: holistic designs with ERCO



ERCO supports lighting designers in offering holistic lighting solutions to construction authorities, users and operators. We consider both the technical interests of engineers and the design ambitions of architects when defining the lighting strategy, arranging luminaires or specifying the details of individual luminaires. Lighting office buildings with ERCO means:

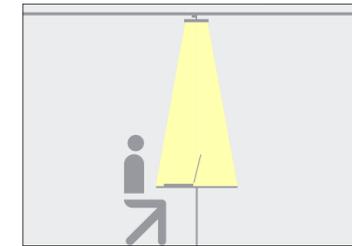
- 1 Zonal, standard-compliant architectural lighting for attractive work surroundings.
- 2 Reliable, durable luminaires for safe planning and cost-efficient operation.
- 3 Vertical lighting and good glare control for high visual comfort at workstations.

Your design process with ERCO:



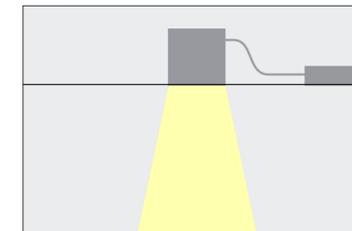
Project support from the start of construction

ERCO views support during building projects in a holistic way. Our lighting consultants offer extensive support with the individual analysis of a project, in project management, with overall costs and for long-term use. Our advice ranges from abstract concepts to specific lighting.



Solving lighting tasks in a perception-orientated way

ERCO provides support with efficient luminaire arrangements and demonstrates the benefits of qualitative lighting design for users and building operators.



Efficiently planning lighting tools

During detailed planning, ERCO supports lighting designers when selecting the luminaire, with specific design and technology aspects and when commissioning the lighting installation.

The added value for creative and technical designers:

Zonal lighting design for indoors and outdoors

Optimised cost-efficiency and individual quality of light

Sustainable product quality

Innovative technology and dependable operation for maximum service life

From building concept to operation

Diverse inspirations in the concept phase and extensive guarantee coverage and services for worry-free operation

Offices with efficient visual comfort

Precise photometrics for low energy costs and avoidance of glare at the place of work

Quality of light at the workplace

Assessment of the light effect and clarification of technical details in the showroom or on site

Extensive design tools

Data for luminaire arrangements and light simulations achieve energy savings and planning certainty

Outstanding product quality

In-house developed control gear and timeless design for maximum precision

Consistent luminaire system

Excellent product design and compatibility throughout for aesthetic added value and flexibility

Detailed luminaire information

Photometric data and diagrams for high planning certainty and reliable implementation

ERCO lighting tools

Systematically efficient office luminaires

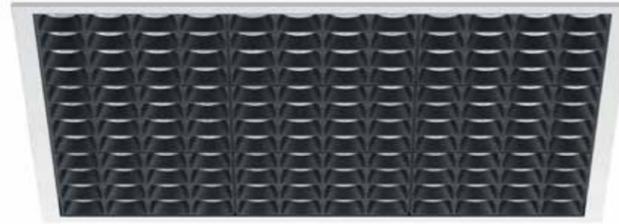
The possibilities are almost limitless for supporting people in their work or other activities with light, structuring or displaying architecture with light and modelling objects. For this purpose ERCO develops lighting tools that efficiently generate precise light for any spatial situation and dimension. ERCO LED luminaires are integrated into the consistent luminaire system of the complete program. The most obvious feature of this is the clear, functional design of the product ranges that enables any combination of products and types. The core of the luminaire system however consists of photometric features – differentiated light distributions according to the office task, a classification into lumen classes and identical light colours. During commissioning the lighting tools also provide reliable mounting options and predefined control interfaces. Lighting designers can randomly combine ERCO LED lighting tools to also solve complex lighting tasks without needing to compromise on the quality of light, flexibility and interior design.

For an overview of products suitable for offices and office buildings, see: www.erco.com/work



The ideal measure

As recessed, surface-mounted and pendant luminaires, extensive premium product ranges such as Quintessence offer designers flexibility for any architectural situation: in all prestigious areas the complete range of visual tasks can be solved with highest-quality downlights, directional luminaires and wallwashers for emphasising the architectural appearance and simultaneously providing maximum visual comfort.



Discreet and precise

Recessed luminaires merge into the background in favour of their lighting effect in the space. In combination with special distributions such as the oval wide flood of Compar, modern, minimalist ceiling designs are possible not only in prestigious areas but also above office workstations.



Human Centric Lighting

Just as outdoor colour temperatures change continuously during the day, the colour temperature of the indirect lighting of Jilly pendant luminaires can be adjusted, for example to support lighting concepts for Human Centric Lighting needs.



Individual light

Easily positioned, no glare and dimmable – light at workplaces must meet individual needs. ERCO task lights such as Lucy achieve this with flexible applications and a striking design that emphasises the company's corporate identity.



Efficient general lighting

Different lumen packages, light distributions and control methods enable lighting designers to also develop versatile, perception-orientated lighting concepts using product ranges such as Jilly in cost-oriented projects. In such situations the wide luminaire spacing reduces investment and installation costs.

Purist design

Lighting tools such as Skim are suitable for lower budgets. With a diversity of versions as downlights or surface-mounted luminaires the product range brings together visual comfort with maximum cost-efficiency and a concise design. The luminaires are therefore the ideal solution for areas with a variety of applications.

Lighting tools according to your needs

We offer you extensive options for individualising standard products in the form of "ERCO individual", as well as providing support for the development of sophisticated special luminaires.

Do you have special needs? Simply contact us! www.erco.com/individual



Flexibility and visual comfort

By uniting the lighting technology of downlights with the flexibility of track luminaires, highly flexible, standard-compliant office lighting on ceilings is now being created. Jilly downlights for track achieve high visual comfort thanks to good glare control, and at the same time provide sufficient brightness at the office workstation due to high luminous flux.



Providing orientation

Bollard luminaires ensure the glare-free illumination of paths, steps and open areas. They thus guarantee customers or employees a sense of safety on their way from the car park to the office. Thanks to Dark Sky technology, lighting tools such as Castor prevent light being emitted above the horizontal line. This ensures high visual comfort in the dark.

Lighting effects for buildings

Robust spotlights such as Gecko enable a high level of design flexibility for facades and outdoor objects due to a wide range of light distributions, lumen values and mounting options. Precise accents emphasise architectural elements and draw the eye towards building entrances. In this way office buildings are transformed into landmarks.



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