



PHILIPS

Office Lighting

Application guide



Inspire your work life with light

Modern lighting ideas to make the office more comfortable



Making the workplace

work for everyone

How light is key to the office evolution

Offices have changed over the years. Our grandparents would scarcely recognise the office of today, or their place in it. The typical early 20th century office had assigned desks, strict hierarchies and virtually no worker empowerment. By the middle of the century, the move had begun to the open plan offices of today. The late 20th century saw the introduction of computer technology, collaborative working practices, portable communications, flexi-time and hot-desking.

Today, there's a growing awareness and concern for employee wellbeing. Companies are asking themselves, is our office environment healthy? Is it comfortable? Effective? Digital connectivity is revolutionizing employee interactions. There's more control and greater choice in the way we work. For example,


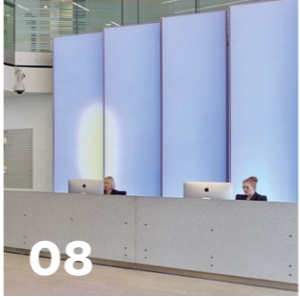




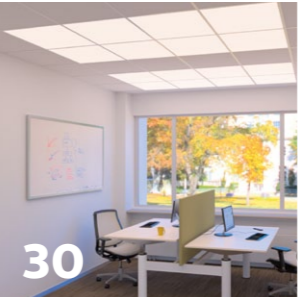

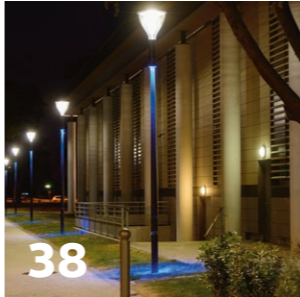
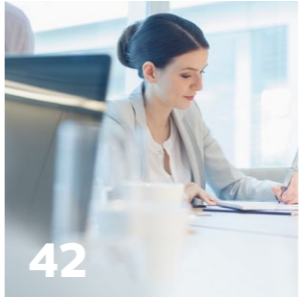


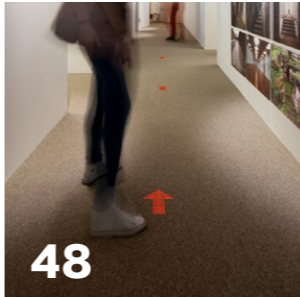
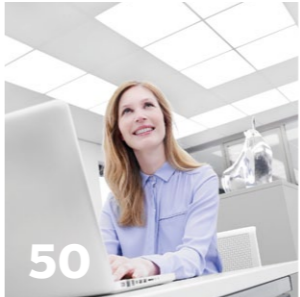

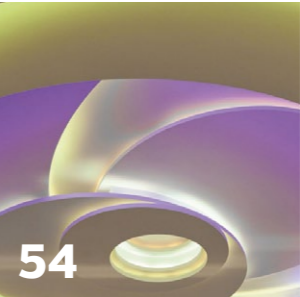
we can now collaborate via video conferencing, each from our own corner of the globe.

Connected lighting can reduce installation costs and optimize buildings by monitoring actual use. It allows personal control of lighting settings via a smartphone and can even act as an indoor positioning grid, enabling employees to find empty meeting rooms with an app.

Lighting can contribute to overall health and wellbeing by being reactive to the different needs of different types of worker. Modern dynamic lighting solutions support activity-based workspaces and stimulate different kinds of activity from discussion and debate to peaceful concentration.

This guide aims to inspire you with examples of different lighting schemes, designed to make your business more competitive, increase your efficiency, help keep staff healthier and happier, and make your company and brand greener and more sustainable.

We've identified some key trends, so that you can stay up to date and future proof your business with the latest designs and innovations in lighting.

 04	 08	 12	 16
Current trends	Receptions	Corridors	Break-out areas
 20	 24	 30	 34
Meeting rooms	Open offices	Private offices	Restaurants
 38	 42	 44	 46
Parking and outside areas	Lighting beyond illumination	Connectivity	Large luminous surfaces
 48	 50	 52	 54
Luminous Carpets	Soundlight Comfort Ceiling	OneSpace	Evaluating LED performance

Gear up your workplace for a
**greener,
more
efficient
future**

Four current trends in office design

The workplace has seen huge changes in recent decades. Economies and the environment have been transformed, along with wider society. As a result, there's constant movement in workplace design too.

Gone are the days of isolated workers sitting at their individual desks. We now live in a world of open-plan space, 'hot desking', the sharing of ideas and a culture of collaboration.

Here are four drivers in workplace design where the latest ideas in lighting are making a big contribution:



Green buildings offer energy and cost savings. They also reduce CO₂ emissions, create a healthier work environment and enhance brand reputation, helping companies stay competitive.



Health and wellbeing is now recognized as an important factor in business success. When staff are comfortable, they feel motivated and productive.



Activity-based workspaces offer flexibility by organizing office space into different zones where workers can collaborate, be creative together or just be quiet and get on with solo tasks.



Connectivity is at the heart of efficient team-working, allowing for a people-centric approach where employees can communicate, collaborate and share resources.



Green buildings

We believe in the idea of a 'circular' economy. It's a model in which consumers and businesses reuse products and opt for ongoing service contracts, rather than simply 'taking, making and disposing'.

Green buildings have structures and use processes that are environmentally responsible and resource-efficient throughout their lifecycle. Philips can assist your organization in improving sustainability and meeting legislation requirements in different territories. Our connected lighting also allows for cost savings by gathering data on building usage by tracking humidity, CO₂, temperature, presence and daylight.

You could see a 30-50% reduction in energy use and up to a 16% increase in asset value, as well as a 35% drop in carbon emissions.



Activity-based workspaces

Organizations want to use their work spaces as efficiently and inventively as possible. Very often, that might mean holding a team meeting in a canteen or using a breakout area to brainstorm strategy. By creating different zones, you can offer places where employees collaborate, create together or simply work more quietly by themselves. And when you adjust the color and intensity of lighting, it can make a marked difference.

In fact, light can be a highly effective mood changer, creating different ambiances to welcome guests, enhance presentations, provide focus and boost concentration levels.

Whatever the activity, lighting can be adjusted to support the work mode. At Philips, our vision is to enable people to work anywhere to suit their day so that less office space is needed. Who knows? Soon maybe everyone will get to have a window seat!



Health and wellbeing

Many companies now accept and understand that their employees' health and happiness isn't just a 'nice to have'. It's good for business too.

Put simply, humans need light. It's important for our health, as it regulates key processes in the body, such as the all-important sleep-wake rhythm.

The right lighting contributes enormously to feelings of increased alertness, better meetings, more productive working and increased motivation. In fact, studies have shown that you can achieve up to a 25% increase in memory function and a 23% increase in productivity.

At Philips we're working to give employees greater control of their own comfort, through the use of smartphone apps. We also collaborate closely with partners to ensure that lighting and acoustics are seamlessly integrated.

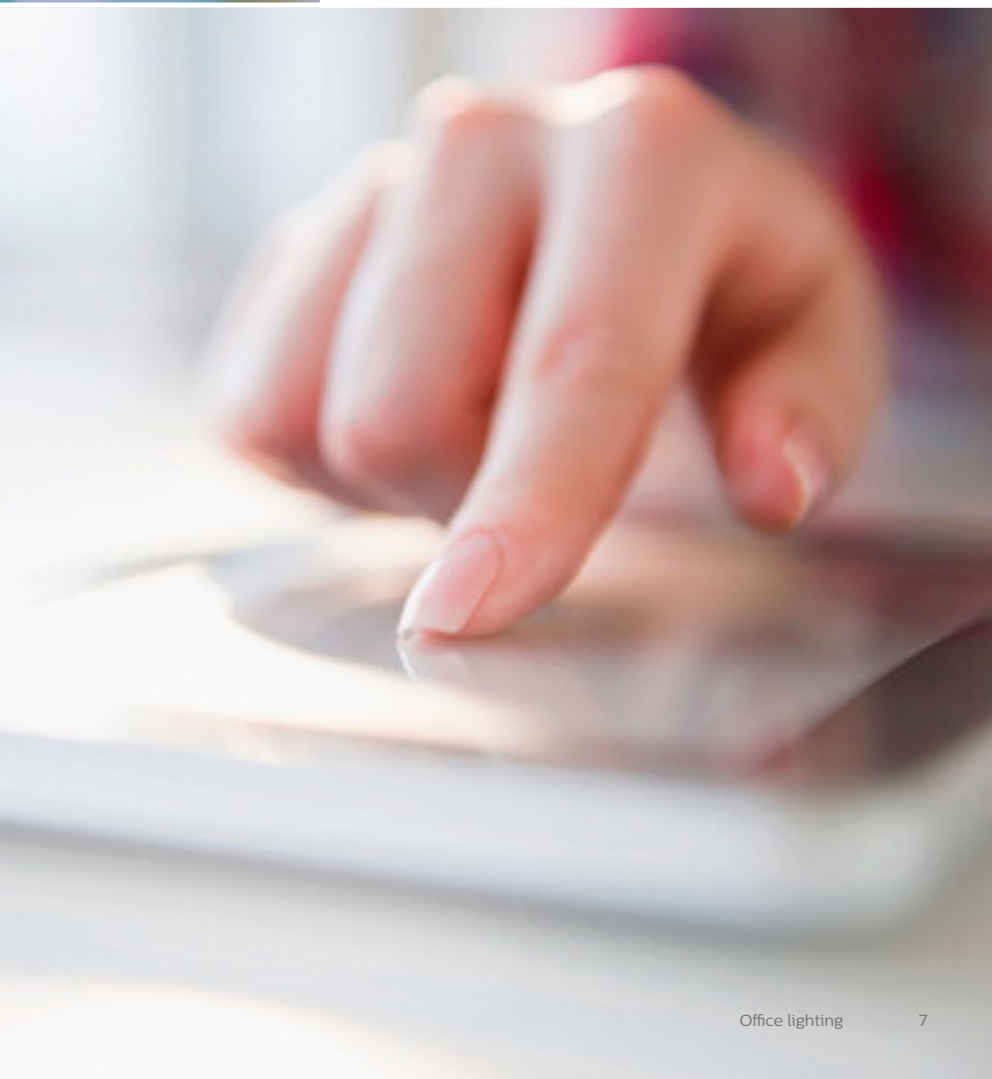


Connectivity

There has been a major shift in the modern era from analog to digital. We're often told that the smartphones we carry around have more computing power than was used by Mission Control in the 1960s moon landings.

With the advances in technology, we're now able to take a user-centric approach built around staff. Lighting will become increasingly connected to building automation systems, responding to changes of traffic inside a building to optimize energy savings and building usage.

Philips is also helping to make 'the internet of things' a reality, so that devices can be interconnected and data and services accessed globally. Connected lighting systems offer the possibility of adaptive environments that can sense, anticipate, and respond to the specific needs of the people who use them. That means greater comfort, greater personalization and greater productivity.



Making a grand entrance

You never get a second chance to make a first impression

The reception area of any organization is crucial. Its role is to make visitors feel welcome and to establish your company's personality from the first moment. Do you want to be seen as corporate or creative? Solid and reliable? Or fun and funky?

Flexible office lighting solutions make creating the right first impression easier and more dynamic. From dramatic, vibrant schemes that reflect corporate colors to soft ambience designed to soothe the senses.

Your choice of lighting will set the mood and enhance the expectations not only of clients and customers; it also allows you to create the right welcome for your staff.

Modern lighting design technology means you don't have to settle for a static lighting solution but can create something dynamic that can be controlled, altered and programmed to create a unique welcome.

The right combination of dynamic lighting solutions and intuitive controls can create a fluid ambience that reacts to natural light levels. Colorful accents can guide visitors to the reception desk or make seating areas more inviting. Add to that intelligent controls and you can enjoy welcome savings too.

The key is to choose the look and feel that best expresses your company's style and tone, from the second visitors walk in.



200 Gray's Inn Road, London, UK

Designed by Foster+Partners, 200 Gray's Inn Road was created as an HQ for broadcaster ITN a quarter of a century ago. An iconic building, it provides high-quality offices and TV studio space today for a range of media companies. The original reception area had been altered several times since 1990 and, in 2013, the owners decided to explore ways of enhancing the space and reflecting the creative nature of the area.

Ian McArdle Architects took the decision that it would be difficult to remodel existing lighting and were conscious of the need to avoid disruption to broadcasting schedules. They therefore took the decision to augment it with new and exciting solutions – including Philips luminous textile panels with Kvadrat Soft Cells, which create a dramatic backdrop to the reception.

Each panel integrates multi-colored LEDs within the textile to create an inspirational 'art wall', featuring a dynamic abstract painting from artist Eleanor McArdle. Thanks to the unique manufacturing process, all of the 1.8 x 4 m panels also dampen noise and soften echoes.

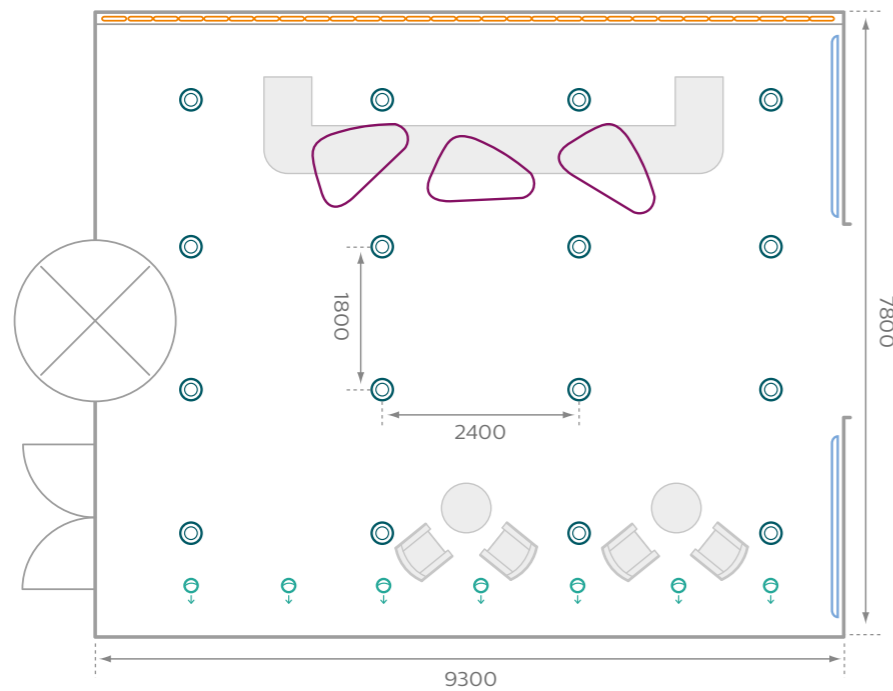
“

The effect has been uplifting and has added an air of sophistication to the reception that has received almost universal praise – which in a building full of journalists and broadcasters is difficult to achieve.”

Ian McArdle, IMA

Welcome to tomorrow's reception

Example floor plan layout
All dimensions in millimeters



Luminaires used

General recessed lighting



LuxSpace Downlights

Create a gentle natural light, ensuring visual comfort. Perfect integration with the ceiling thanks to thin narrow rim.

Accent lighting directed at wall



LuxSpace Accent Adjustable

Energy-efficient accent lighting, recessed in the ceiling and aimed at the wall.

Cove lighting along wall



eWCove MX

Cove lighting along the wall via this linear LED fixture, which offers multiple options for design and application flexibility.

Suspended above reception desk



Luceplan Petale

Suspended above the reception desk, these lamps have an organic form. The body consists of a sound absorbent panel upholstered in white fabric, improving acoustic comfort.

Dynamic panels along wall



Large luminous surfaces

Dynamic panels at the wall using luminous textile that integrates multicolored LEDs within fabric panels that also soften sound. Endless ways to play with color, movement, texture and light. See pages: 46/47

This plan applies some of the latest ideas in lighting design to a reception area, to inspire you to find the best way to express the personality of your company.

Immediately on entering the reception area, the visitor's attention is drawn to the back walls, which are lit with large luminous surfaces panels. These unique panels offer a revolutionary new way to bring interior spaces to life with light, texture and dynamic visual content. (This content is free to choose and can be customized to suit the image of any company.)

The reception desk is highlighted by the organic forms of Luceplan suspension lamps. The body of these lamps consists of a sound absorbent panel upholstered in white fabric, designed not only to create a dramatic lighting effect but to improve acoustic comfort. To create a spacious and inviting effect, the wall behind the reception desk is highlighted by cove lighting with luminaires positioned at the perimeter to direct light onto the top of the wall. Meanwhile, the wall opposite the reception desk is highlighted by accent lights, recessed in the ceiling. Light beams aimed at the wall create accents which liven up the environment and draw attention to paintings or graphics. Lastly, downlights, recessed in the ceiling, create a general illuminance in this striking reception area.



Solo Interiors, Moscow



Dynalite enhanced lighting controls

Philips Dynalite is the ideal lighting control solution for reception areas. It allows your business to create attractive, comfortable and yet highly functional environments. These controls stimulate and optimize energy use, while permitting you to tailor areas to specific tasks.

The intelligent control system also allows for advanced scene setting and energy reduction. And because Dynalite controls can be integrated with building management systems, incorporating third-party control elements, you can gain further energy savings. This scalable approach also accommodates re-configuration of office spaces. So you can avoid wasteful and intrusive lighting refurbishments and extend the lifetime of your system.

Going beyond function

How to create safe, bright corridor spaces

As staff and visitors move between rooms in an office, you want the same feeling of warmth and security that you'd find elsewhere in the building. At the same time, you're understandably looking to save on energy. There's always a tendency, after all, to leave lights on in corridors when there's no one actually using them. The net result will inevitably be increased overheads and a greater carbon footprint.

With intelligent solutions from Philips Lighting, the corridor can be more than just a functional area. We can help you to create a real ambience

to your interconnecting spaces, by adding accent to architectural features and works of art. Consistent lighting themes allow visitors to navigate their way through a building more easily too.

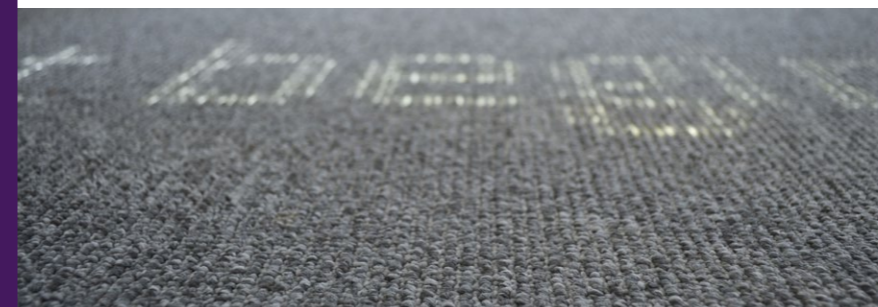
We never forget the importance of cost and energy savings though.

Through dimming technology and presence detection, your lights can operate at their optimal level. When no one is using the corridor, the lighting levels are reduced and energy wastage is kept to an absolute minimum.

“

When I heard about the new Luminous Carpets solution by Philips and Desso, I knew this solution – displaying the latest news on the floor – was ideal for the entrance of our future newsroom.”

Kai Diekman, Chief Editor BILD newspaper



Axel Springer Office, Berlin, Germany

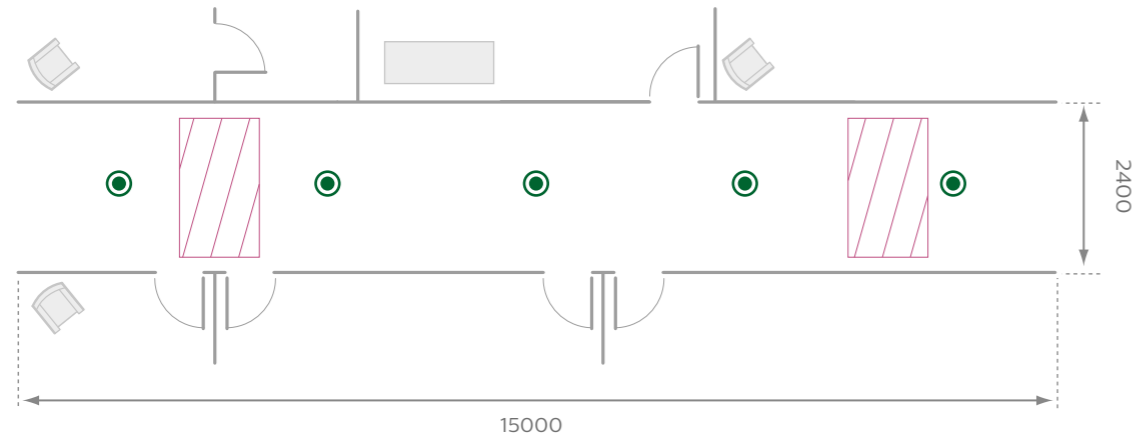
BILD – founded by Axel Springer in the 1950s – is the leading media brand in Germany, with over 2 million copies of the paper sold every day. Its print and online operations are managed from a 19-story, high-rise building in the capital, Berlin.

With a redesign of the central newsroom planned, the company wanted practical innovations in lighting, incorporating high design standards. The Luminous Carpets™ solution from Philips and Desso meant that the company was able to create a striking impression for visitors by projecting the latest news on to the floor using realtime RSS feeds. The 'wow' effect has dazzled a number of VIP visitors, including Hollywood actor Kevin Costner.

Corridors

that come to life

Example floor plan layout
All dimensions in millimeters



Luminaires used

General recessed lighting



GreenSpace DN470B LED20S/ 840 C

This cost-effective and sustainable downlight, featuring the latest LED technology, is ideal for the corridor environment. You can be sure of very low power consumption, but also be confident that you have stable color, high color rendering and a consistent light output.



Comparison table

	Quantity	Em (lux)	System power (W)	Installed power (W)	W/m ²	W/m ² /100lux
GreenSpace downlight	5	168	24	120	3.3	2.0
Conventional PLC 2x 26 W downlight	5	159	54	270	7.5	4.7



Luminous Carpets

Bring corridors to life with LEDs from Philips and this remarkable light-transmissive carpet from Desso. Installed underneath the carpet tiles, the LEDs are built into enclosed units that are strong enough to be walked on. They produce a sharp, bright light in any color and are completely hidden from view when switched off.

See pages: 48/49

Tips for making the most of your circulation areas

When you decrease the space between luminaires, you can increase the feeling of comfort and safety. The European Standard (EN12464-1:2011) dictates a minimum of 100 lux at floor level in circulation areas and corridors, although you may find it better to aim for a higher figure to create a more pleasant space for people to stop and talk to colleagues.

We recommend downlights with wide light distribution in confined spaces, helping to illuminate faces and objects. You can also guide visitors through your corridors by the use of lights on doors and walls.

Remember, if your corridors are close to work spaces, you need to consider softer light, as glare can be a cause of eye strain.

Cas Sombroek, Volendam



56% power savings with LED solution over a conventional solution

AB Group Headquarters, Italy



OccuSwitch Controls

Maximise the energy efficiency of your corridor lighting with OccuSwitch. Simple to install and use, the technology provides you with both presence and daylight control.

OccuSwitch DALI is a combined sensor and controller, which will dim and switch the lighting according to the presence of people and available daylight. OccuSwitch Wireless works from sensors you can place anywhere. It can reduce energy use by up to 55% by dimming and switching off luminaires as appropriate.

Did you know?



LuxSpace Accent Adjustable

An excellent way of making your corridor appear more spacious, these high-quality accent lights work with an LED reflector. Simply aim them at the wall and you'll find you add an extra sparkle through their good color consistency and high color rendering. Naturally, they are low maintenance and low cost to run.

More productive work spaces

Break-out areas that truly inspire your staff

Everyone needs a break from their desks and a chance to meet up with colleagues over a coffee. Businesses also want to create functional and attractive areas for people to meet and discuss ideas. In fact, these kind of relaxing break-out areas are very much expected in modern office environments.

The question is what part lighting can play in helping to change the emotional tone of a space.

Our view is that with good quality light, glare control and the ability to dim the area when required, it's possible to create a space which is truly different from the regular office. And when you rejuvenate and inspire your employees and visitors, it will almost certainly have a positive impact on productivity and the bottom line.



“

Good lighting is vital in all our design work. The right shapes, materials and colors can be found only if the light is right.”

Anu Latvala, Designer,
Pentagon Design Oy



Pentagon Design, Helsinki, Finland

An agency specializing in everyday products, services and environments, Pentagon Design decided to move their premises to an old hat factory which was being refurbished to coincide with Helsinki's role as World Design Capital in 2012.

Given the relative freedom to use innovative lighting designs and concepts, interior designer Anu Latvala was determined to emphasize the architectural features of the premises. The lighting needed to be adaptable and economic, which meant that Philips LED solutions became an obvious choice.

The resulting designs were flexible, simple and user-friendly, integrating well with the existing building. The company selected eW Blast Powercore, Celino LED and LumiStone luminaires to bring the high ceiling space of the spectacular open-plan office to life, resulting in break-out spaces that inspire creativity, while providing a sense of real style.

Breakthrough

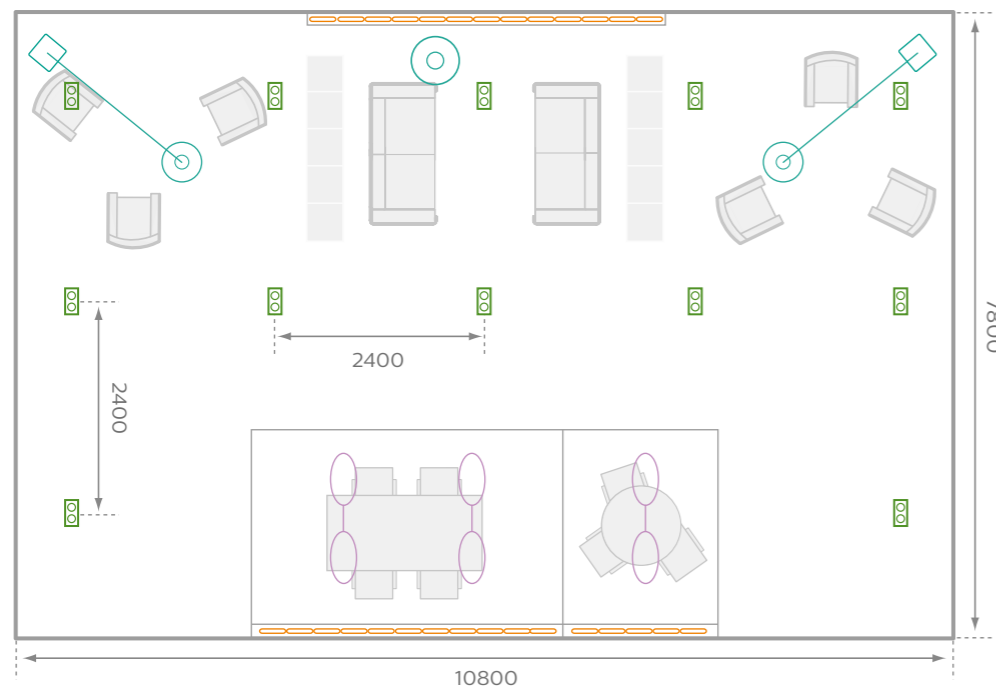
ideas for break-out areas

Create unique spaces in the heart of your office

Accent lighting on floors and walls is essential to the overall illumination in a break-out area and how warm and sociable the space feels. If you add additional floor lamps, you can create a truly distinctive atmosphere that feels quite different from the usual workspace and creates a more intimate environment.

Consider using cove lighting in different colors for subtle accenting. You can also separate spaces when people need to have more private conversations.

Example floor plan layout
All dimensions in millimeters



Luminaires used

Feature lighting



Lady Costanza by Paolo Rizzatto

This lamp is light enough to move easily around your space and allows you to manage luminosity in two ways. You can regulate intensity through a touch-dimmer on the sensor rod and use a foot switch for on-off control. The telescopic nature of the product – and the ability to rotate it 360 degrees on its base – makes the Luceplan Lady Costanza particularly flexible.

Cove lighting along wall



iColor Cove MX

These high-intensity LED fixtures give you almost limitless options for alcoves, accent spaces, backlighting and wall washing.

General recessed lighting



StoreFlux

This is a powerful LED accent light, which blends in perfectly with your office environment thanks to its unique gridlight design. As you'd expect, it has a long lifetime and uses energy very efficiently.

Suspended above tables



LumiStone

Its appealing design and indirect lighting make LumiStone the perfect pendant for your break-out space. You can achieve a 50% energy saving compared to a functional luminaire.



ToBeTouched Controls

Why not put your employees in control of the break-out space themselves? With wall-mounted ToBeTouched controls, they can adjust the color and intensity of cove lighting to create the ideal ambience for their meeting or break.

The technology comes in four different models, ranging from a simple on-off switch through to versions with dimming functionality, a cool/warm-white controller and a full color option.

Euptouyou Offices, Nantes



Spaces for **better** decision-making

How lighting can enhance your meeting rooms

Although it might be argued we all spend too much time in meetings, there's no denying they play an important role in every business. You want to give your people a sense of wellbeing in the meeting room environment and create an atmosphere which encourages concentration.

We know that lighting has a very deep effect on people's feelings, so visual comfort is very important. Philips solutions are also focused on flexibility. When someone is making an informal presentation,

for instance, you might want a softer mood to the way in which a room is lit. When teams are collaborating and sharing ideas, on the other hand, higher output is important. You will, however, want to minimize glare.

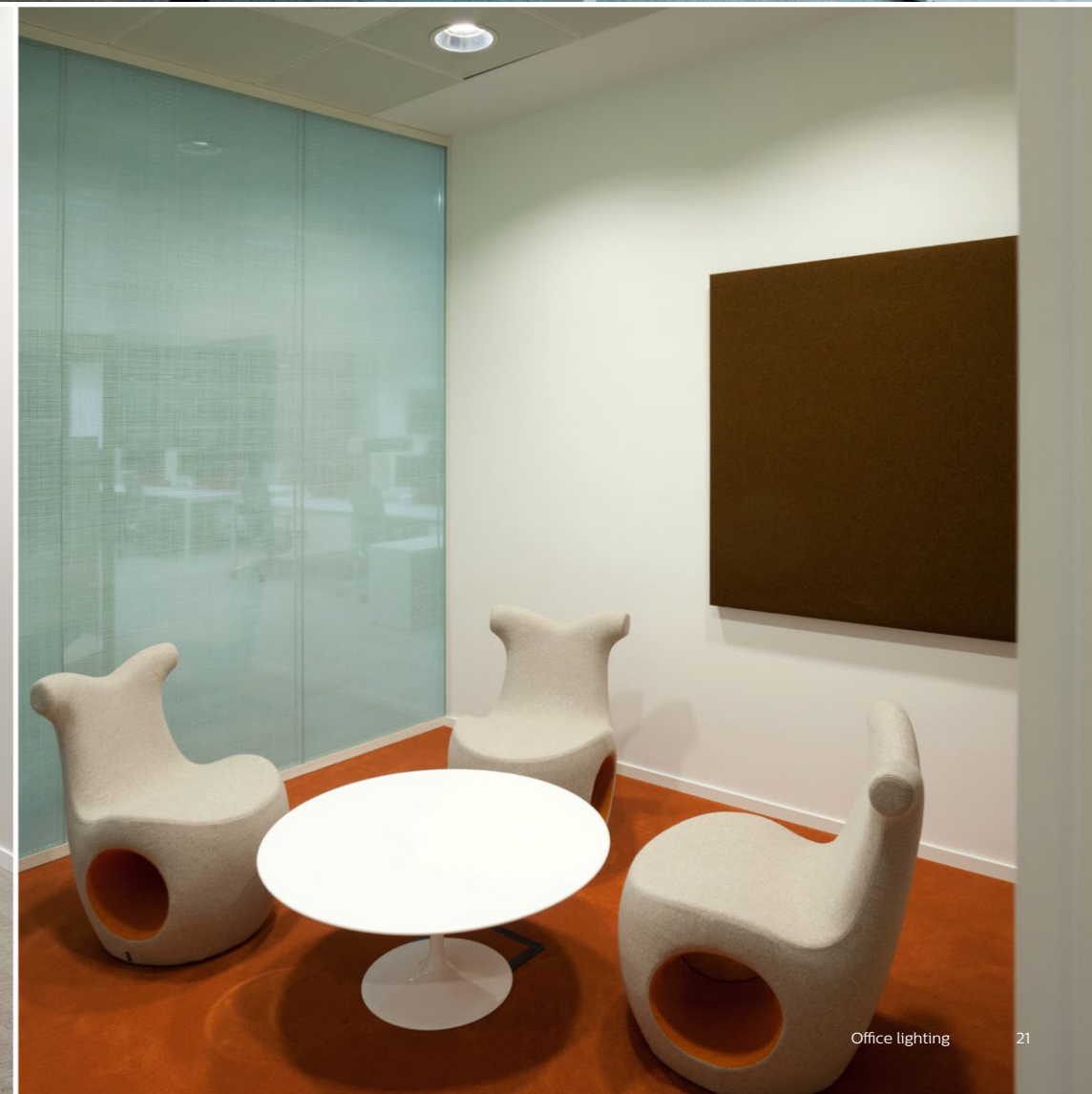
With color effects for accents and alcoves, our technology allows you to give a truly distinctive flavour not just to different rooms, but also to individual meetings. Controls allow you to alter settings just by touching a screen.



Microsoft Office, Peschiera Borromeo, Milan, Italy

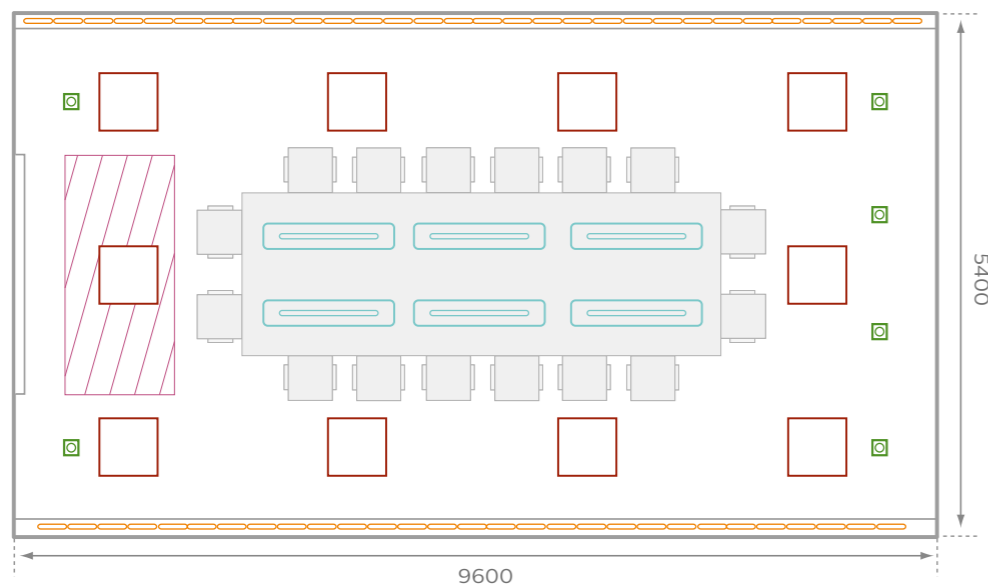
Microsoft's new Italian office complex is situated just outside Milan and comprises 50,000 square meters of walking space. The original brief was to construct a highly-energy efficient building and the solution featured Philips SmartForm lighting systems, equipped with high-performance optical systems.

As well as minimizing energy consumption in comparison with the previous installation, the lighting integrated perfectly at a visual level with the modular suspended ceiling.



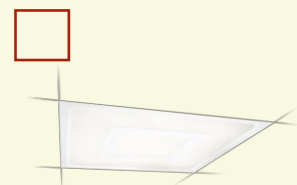
Changing the mood of a meeting

Example floor plan layout
All dimensions in millimeters



Luminaires used

General recessed lighting



SmartBalance recessed
This appealing surface-of-light solution can save up to 40% on energy costs with its 108 lm/W energy efficiency. We offer different geometries and ways of mounting the product.

Accent lighting directed at wall



StoreFlux
This high-quality light blends in perfectly with your meeting room, with its gridlight design and low maintenance costs.

Cove lighting along wall



iColor Cove MX
This compact and intelligent RGB cove light gives you a huge choice of colors and background effects. It's compatible with industry-leading controls and can be flexibly mounted and positioned.

Suspended above table



SmartBalance pendant
Attractive and unobtrusive, SmartBalance is compact, lightweight and energy efficient at 90 lm/W. It allows for energy cost savings of around 30%.

Floor covering



Luminous carpet
Imagine greeting a guest with a special message or even signalling to employees how long a meeting is expected to last. Luminous Carpets™ can rebrand an office in seconds, showing your logo or creating an environment that is unique and personal.

See pages: 48/49

Combine lights to boost productivity and stimulate discussion

It's the combination of lighting you employ in your meeting rooms that makes the real difference. In addition to general lights recessed in the ceiling, you can opt for pendant luminaires above tables, recessed accent lights and cove lights.

In a brainstorming session, bring the lights up to maximize people's involvement or give the discussion colorful inspiration through a wall wash in a particular color.

If you're looking for something more formal, dim the general lighting and lift the output of the pendant luminaires. For presentations, you can dim the pendants too and rely on the wall accents and cove lighting instead.



The ideal way to inspire great work

Practical solutions for open office areas

Office lighting is something businesses simply can't afford to get wrong. You need a working environment which is truly adaptable, as well as a pleasant and motivating space for your employees to spend their day. With Philips Lighting, flexibility and wellbeing go hand in hand.

It's important, of course, to balance functionality and inspiration. People want lights that allow them to perform a whole range of practical tasks, but they also

welcome the opportunity to personalize the area in which they work. With individual control systems, it's possible to make a desk area a unique environment.

We believe in office spaces that are intuitive and responsive. That way, staff work more effectively and productively. And with daylight dimming and presence detection, you can greatly reduce energy consumption too, so that everyone in your company feels they are making a positive contribution to the environment.



“

Sustainability is an important topic for us. It's in our blood. You can see it everywhere in our work. When designing the new office building, we had the opportunity to realize sustainable and energy-smart solutions.”

Dennis Kerkhof, real estate development project manager at thuis



thuis Housing Association, Eindhoven, The Netherlands

Dutch housing association thuis prides itself on offering much more than just a roof over the heads of its residents. It's a philosophy that was extended to staff and visitors when a new office was created as part of a 48-apartment development of social housing, complemented by a health center.

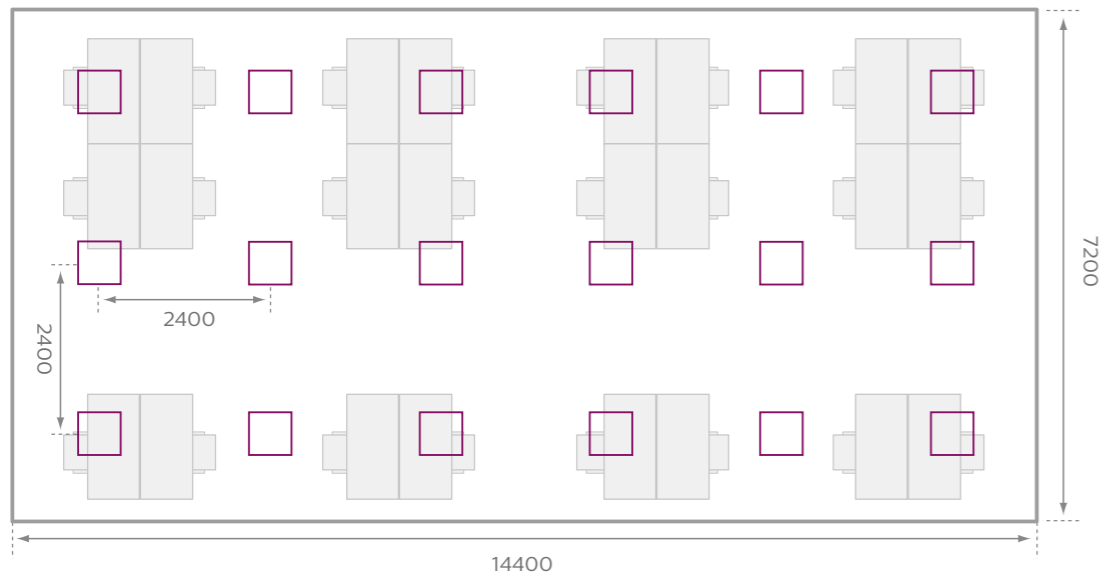
Initially, the steering committee responsible for the project wasn't convinced by LED lighting, as the perception was that it gave out a cold light and that more fittings would be needed than with conventional solutions. After a tour of the Philips Lighting Application Center, however, there was a change of mind.

Ultimately, the lighting played an important role in an integral solution, which involved PowerBalance LED luminaires in an Inteco climate-controlled ceiling, ensuring optimal heating and cooling. With its round optics, the PowerBalance has a pleasant appearance and – thanks to daylight control and presence-sensing devices – plays an important part in controlling energy use.



Highly sustainable for productive offices

Example floor plan layout
All dimensions in millimeters



Luminaires used

General recessed lighting



PowerBalance 40S / 840

PowerBalance is low-glare lighting, which means your workforce will suffer less from eye strain and irritating on-screen reflections.



Control through OccuSwitch

All OccuSwitch controls have automatic detectors, which pick up the slightest movement and turn lights on and off to save energy. OccuSwitch DALI optimizes these energy savings by using intelligent daylight controls. OccuSwitch Wireless, meanwhile, allows you to place sensors anywhere and save up to 55% of energy by dimming and switching lights.

Comparison table

	Quantity	Em (lux)	System power (W)	Installed power (W)	W/m ²	W/m ² /100lux
PowerBalance 40S	18	578	35	630	6.1	1.1
Conventional 4x18W TL-D	18	517	69.5	1251	12.1	2.3

Opening up new dimensions in open plan

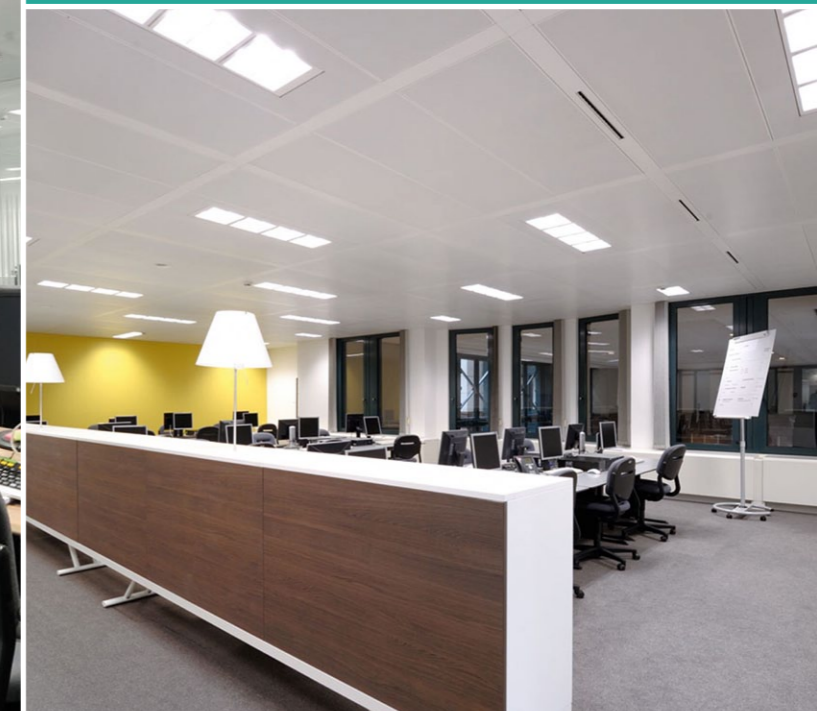
Introducing PowerBalance

Our most energy-efficient office LED luminaire, PowerBalance can halve your energy costs in comparison to a T5 fluorescent light. As well as giving you a lower operational cost, the luminaire grid offers uniform lighting and is low glare to prevent eye strain. Versatile modular and semi-modular luminaires can be mounted on either exposed or concealed ceiling T-bars, as well as plaster and Bandrastrer-type ceilings. We also have surface-mounted versions available.

KBC Brussel

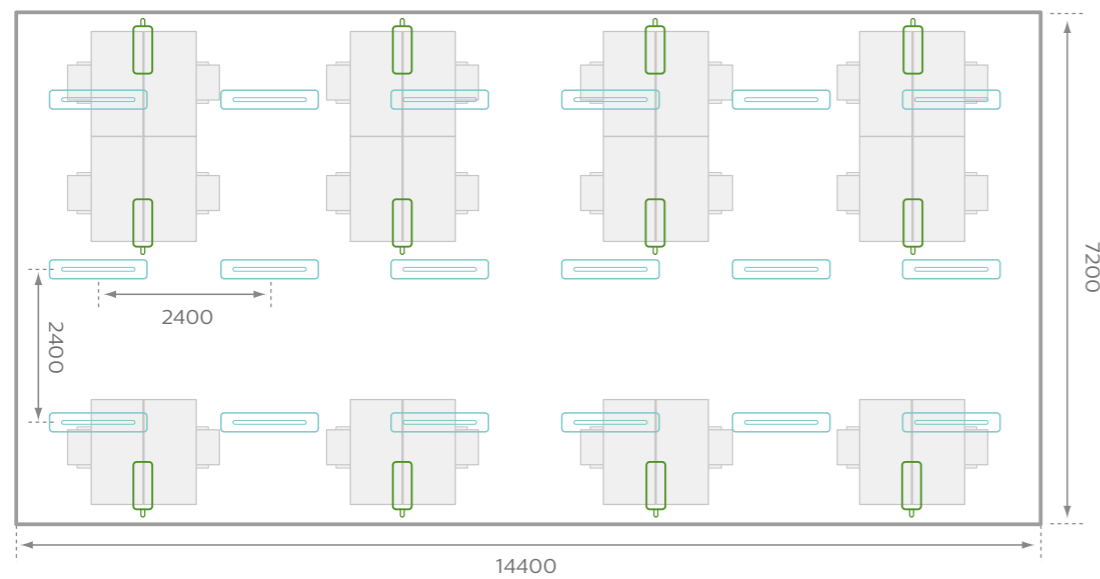


50% power savings
with LED solution over a conventional solution



Great design and easy to adapt

Example floor plan layout
All dimensions in millimeters



Luminaires used

General lighting

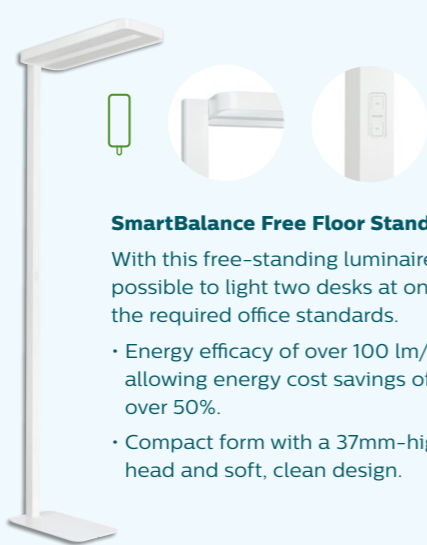


SmartBalance Surface Mounted

With a sleek design to minimize ceiling clutter, SmartBalance also brings you:

- Energy efficacy greater than 90 lm/W, allowing for energy cost savings of around 30%.
- Meets UGR 19 and two levels of L65, namely 1500/3000 cd/m².

Over desk lighting



SmartBalance Free Floor Standing

With this free-standing luminaire, it's possible to light two desks at once to the required office standards.

- Energy efficacy of over 100 lm/W, allowing energy cost savings of over 50%.
- Compact form with a 37mm-high head and soft, clean design.

Did you know?



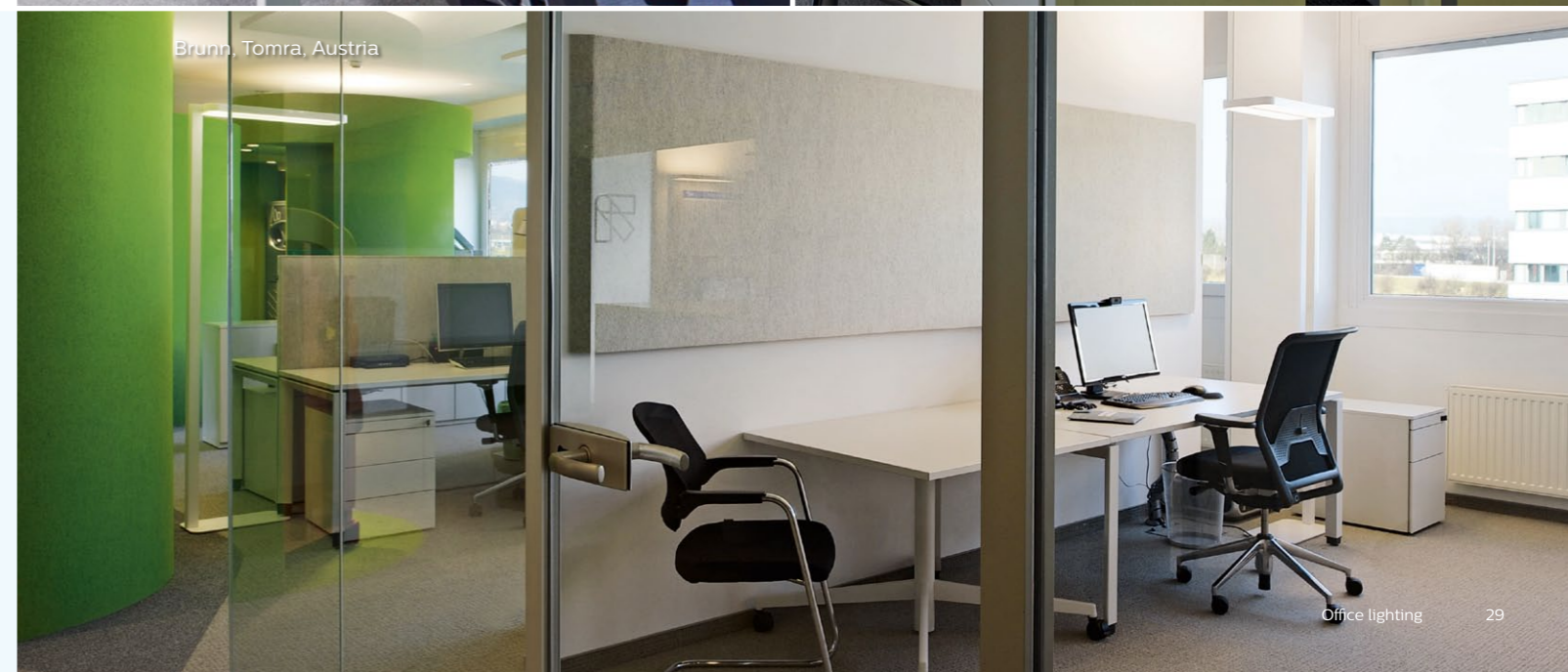
Why not consider using the high-output version of SmartBalance Free Floor Standing? It's capable of providing complete lighting requirements for two separate work stations*.

*Scheme shown above features low-output version of product, combined with surface-mounted luminaire.

Introducing SmartBalance

SmartBalance is designed to improve on traditional T5 lighting, offering style, adaptability and sustainability, as well as creating a soft, comfortable light. It helps you create a 'green building' by reducing your carbon footprint.

This lighting design embraces two luminaires from the same family – a surface-mounted SmartBalance on the ceiling and a free-standing luminaire alongside the desk. The free floor standing version allows for complete personal control, with separate buttons for direct and indirect lighting allowing you to create your perfect working environment.



Personal and **inspirational**

Private offices that energize your employees

We all like the idea of being able to retreat into our own private space at work. Peace and quiet can be a real aid to concentration, but if sunlight is in short supply, it's all too easy for energy levels to dip.

By thinking intelligently about lighting, it's possible to enhance employees' wellbeing and keep them energized.

Usually the aim is to create a sense of natural light, rather than anything too harsh or artificial. After all, the human senses are developed for an outdoor environment and our biological clock is regulated

by light and darkness. Incredibly though, we can spend up to 90% of our time indoors.

Visual comfort is therefore very important in the office, along with the ability of any worker to dim the lights as they feel the need.

When you add in the idea of presence controls, which automatically turn off the lighting when no one's around, you can create bright and attractive office spaces without worrying about the environmental or financial cost.

City Hall, Nuenen Municipality, The Netherlands

When the Municipality of Nuenen was looking to refurbish the private offices and meeting rooms around its reception area, the brief was to create a real impression for visitors, while ensuring a contemporary ambience. Acoustics were also important to the authority - a reason for selecting ceiling lighting that was functional as well as stylish.

SoundLight Comfort Ceiling - the result of a close collaboration between Philips Lighting and Ecophon - was ideal for the requirements of the project. With its integrated, sustainable LED lighting and high level of ceiling sound absorption, it delivers a more pleasant and relaxing working environment, in which it's possible to enjoy private conversations.

Light is regulated and automatically adjusted to change with the ambient daylight. And with its use of third-generation glass wool, SoundLight Comfort Ceiling has by far the lowest carbon footprint of comparable products on the market.

“

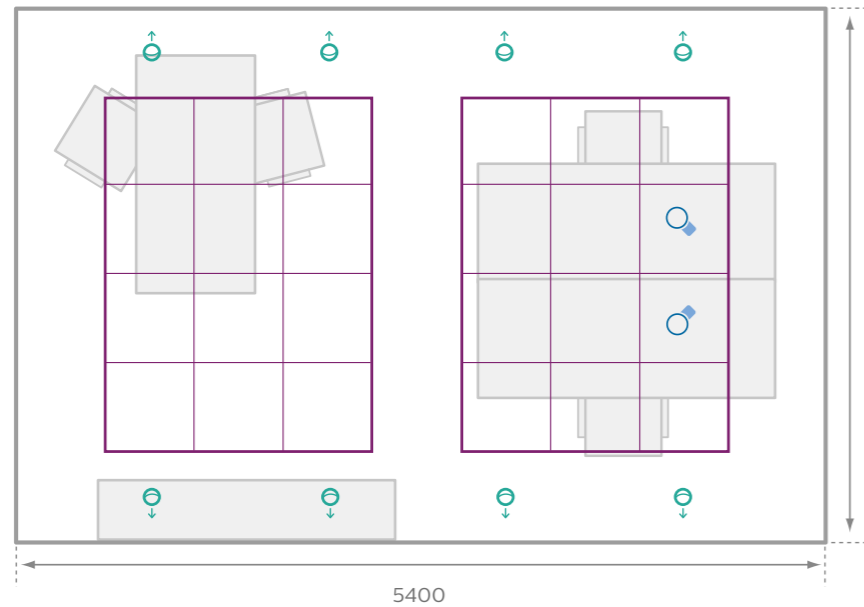
We were looking for a ceiling with character. Together with Ecophon and Philips, we came up with an innovative and exceptionally attractive, sustainable solution for the acoustic ceilings and special lighting.”

Peter de Graaf, Project Manager
Nuenen Municipality



Tranquil, yet productive

Example floor plan layout
All dimensions in millimeters



Luminaires used

General recessed lighting



Soundlight Comfort

Soundlight Comfort Ceiling suits both a flexible, identical layout throughout the office, and a more activity based lighting design mirroring room characteristics and specific room functions with required lighting levels.

See pages: 50/51

Individual desk lighting



TaskFlex

By adding a free-standing desk luminaire, you can ensure that an office employee has exactly the right amount of comfortable light whenever they need it. TaskFlex is easy to install and can be angled very precisely. The LED solution delivers 500 lux task lighting when you combine it with 300 lux general lighting.

Accent lighting directed at wall



LuxSpace Accent fixed

45% more energy-efficient than CDM-Elite, LuxSpace Accent is a great way of delivering high-quality light at a lower cost. Thanks to very Hi-LOR reflectors (up to 90%), you can obtain efficacy up to 78 lm/W.

En+ Group Office, Russia



Haworth showroom, Austria



The optimal personal workspace

Built as a collaboration between Philips and Ecophon, the Soundlight Comfort system has the dual effect of generating light and absorbing sound. Both processes are happening beneath the visible surface of each ceiling tile.

The overall impression for the office worker is of high vertical light levels, but with a rich and tranquil atmosphere. Light is diffused in every direction by the smooth matt surface of the panels, while recessed wall accent lights provide an extra dimension and element of contrast.

You can control Soundlight Comfort effortlessly via Dynalite, the unique Philips office automation solution.



Intelligent Dynalite Controls

With a touch panel, such as Antumbra, you take full advantage of the advanced scene setting and energy reduction that comes with Dynalite. Pre-program multimedia lighting scenes and create a particular mood for your office.

A recipe for relaxation

How light can enhance the lunchtime experience

When your employees break for lunch in a canteen or restaurant, they don't just hope for a tasty meal. They want to be able to recharge their batteries and socialize with colleagues in a relaxing environment. Naturally, you also want to give the best possible impression to clients and anyone else who may be visiting your offices from outside.

From a lighting perspective, the key is to be able to create an ambience which is functional, but also

stimulating and refreshing. Of course, you may want the option of changing the mood too if you're opening your restaurant after working hours for an event or using it for informal meetings during the day. By the clever use of dimmable LEDs and color, you can turn what might otherwise be an ordinary space into one that is inspiring and multi-purpose.



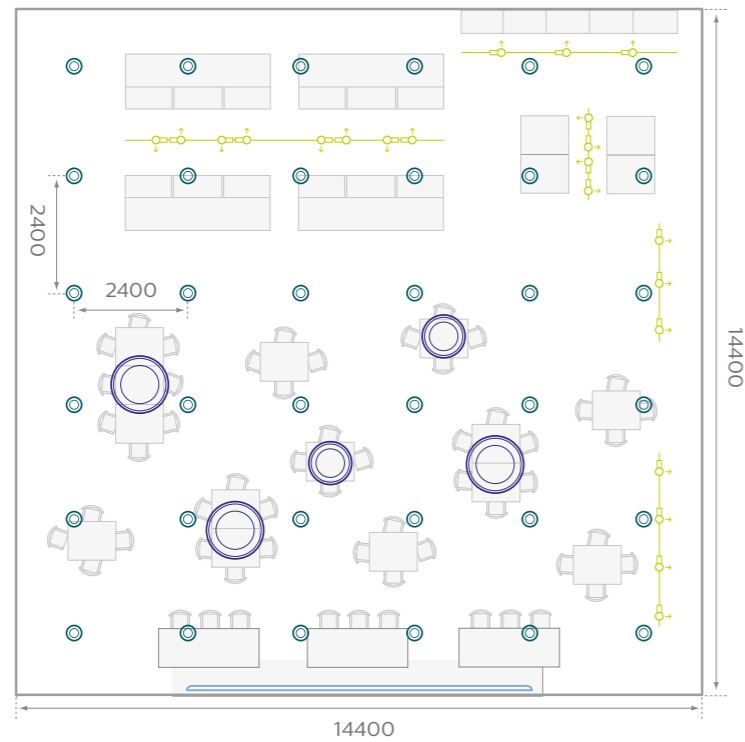
Breitner Tower, Amsterdam, The Netherlands

The Headquarters of Philips is an obvious place to showcase the very best in lighting technology. When employees and visitors go to eat, they're treated to a vibrant, welcoming restaurant space featuring state-of-the-art Luminous Textiles.

The panels display dynamic content which means the environment changes constantly. Not only is the visual display enjoyable to watch, but it's also soothing, relaxing and stylish. The soft texture of the textiles also help to improve the acoustics. By absorbing noise and dampening echoes, it's possible to give employees an environment in which they can chat in comfort and are happy to spend more time.

A full menu of options

Example floor plan layout
All dimensions in millimeters



Luminaires used

General recessed lighting



LuxSpace

These highly-efficient, dimmable downlights come in a choice of sizes and offer 50% energy savings over CFLs. Good color rendering (Ra = 80) and color performance are supported by consistent output. And with 50,000 hours of service, LuxSpace is an excellent choice for cost savings and reduced maintenance.

Accent lighting directed at wall



StyliD Performance

Track-mounted, high-quality accent lights can make a huge impact in a catering or hospitality environment. What's more, you'll find that StyliD is up to 45% more energy efficient than CDM-Elite.

Suspended above tables



Luceplan Silenzio

For tables, we recommend these stylish suspension lights which behave like upholstered furnishings and can be customized in a wide range of fabrics. With their high level of sound absorption, they are ideal for a bustling public space such as a restaurant.

Dynamic panels along wall



Large Luminous Surfaces

Imagine a wall panel providing not only light and texture, but also dynamic visual content. That's the idea behind this luminous textile is that it seamlessly integrates multi-colored LEDs within beautiful fabric panels. There are endless ways to express emotion and bring your restaurant space alive. See pages: 46/47

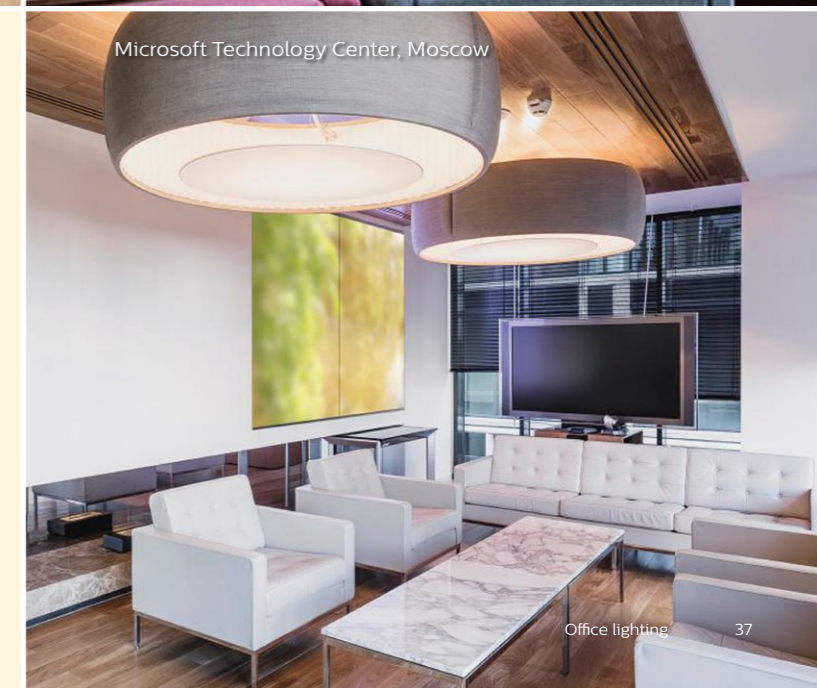
Euptouyou Offices, Nantes



Charlottehaven Hotel, Copenhagen



Microsoft Technology Center, Moscow



Dynalite Controls

Pre-program different lighting scenes that become controllable at the touch of a panel through Dynalite. For your Large Luminous Surfaces, it's even possible to control dynamic content by phone app or hand-held remote.

Where safety comes first

Making car parks and outdoor spaces more welcoming

Every member of your staff – and every visitor to your business premises – wants to feel secure. Instinctively, we know that effective lighting plays a vital role, but many outdoor areas and car parks need to be lit 24 hours a day, which is a big drain on energy resources and money.

The good news is there's no need to compromise between safety, on the one hand, and expenditure on the other. Using the latest LED technology, it's possible to create bright, safe and secure spaces

with good visibility while significantly reducing your energy and maintenance costs by up to 80%.

You start to make even more of a difference when you dim the lighting during the night when there are less people walking around by following a pre-programmed dimming scenario. And by making use of sensors that detect motion, lighting can be dimmed to a minimum level or turned off when no one is around and raised when people come and go.

Audi, Neckarsulm, Germany

Renowned car manufacturer Audi produces its premium ranges – including the A6, A7, A8 and R8 – at its facility in Neckarsulm near Stuttgart in southern Germany.

Outdoor lighting at the production site dates from the mid-1980s and was proving increasingly inefficient from an energy perspective. In addition, over a thousand of the lights contained mercury vapour, banned in the EU from March 2015.

The challenge was for any new solution to be future-proof. It also needed to incorporate intelligent controls to individualize settings and maximize energy efficiency.

The chosen Philips SpeedStar LED system is modular and highly sustainable, as well as being easy and safe to install. We combined SpeedStar with our innovative remote management system called StarSense, which controls the outdoor lights flexibly and monitors their endurance and performance.

Thanks to SpeedStar, Audi now has a bright, dazzle-free environment, as well as an estimated energy savings of 784,000 kWh every year. And a further reduction of 20% is possible thanks to the StarSense controls.

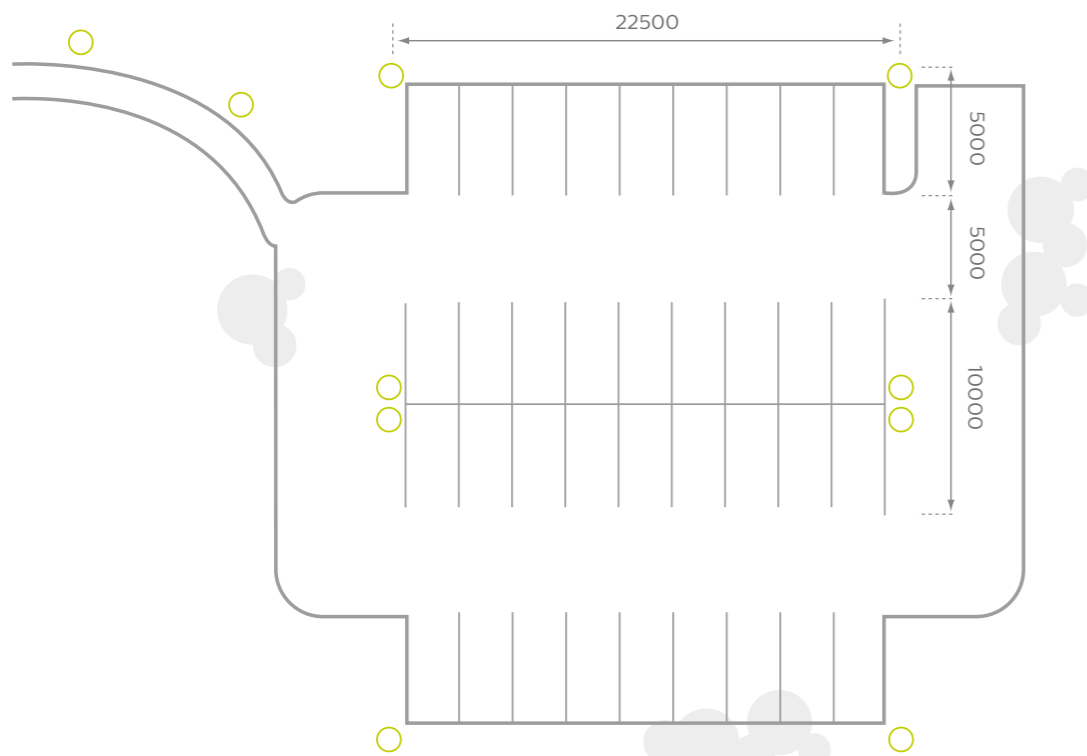


New outdoor insights

How LED adapts to open spaces

Making the most of your outdoor area means selecting the technology that fits the environment. Choose from the uniform light of MileWide², the high energy savings of ClearFlood or the visual comfort of TownGuide. And when you introduce SmartSense, you'll find that you're able to get even more control over your costs and carbon footprint.

Example floor plan layout
All dimensions in millimeters



Luminaires used (3 options)

Option 1



MileWide² LED

This efficient plug-and-play lighting solution adds pure design quality to your outdoor space. Created in conjunction with Holscher Design, it delivers high performance and comes with a range of dedicated masts and brackets. With multi-layer optics, it provides a uniform light distribution and reduced glare.

Option 2



TownGuide

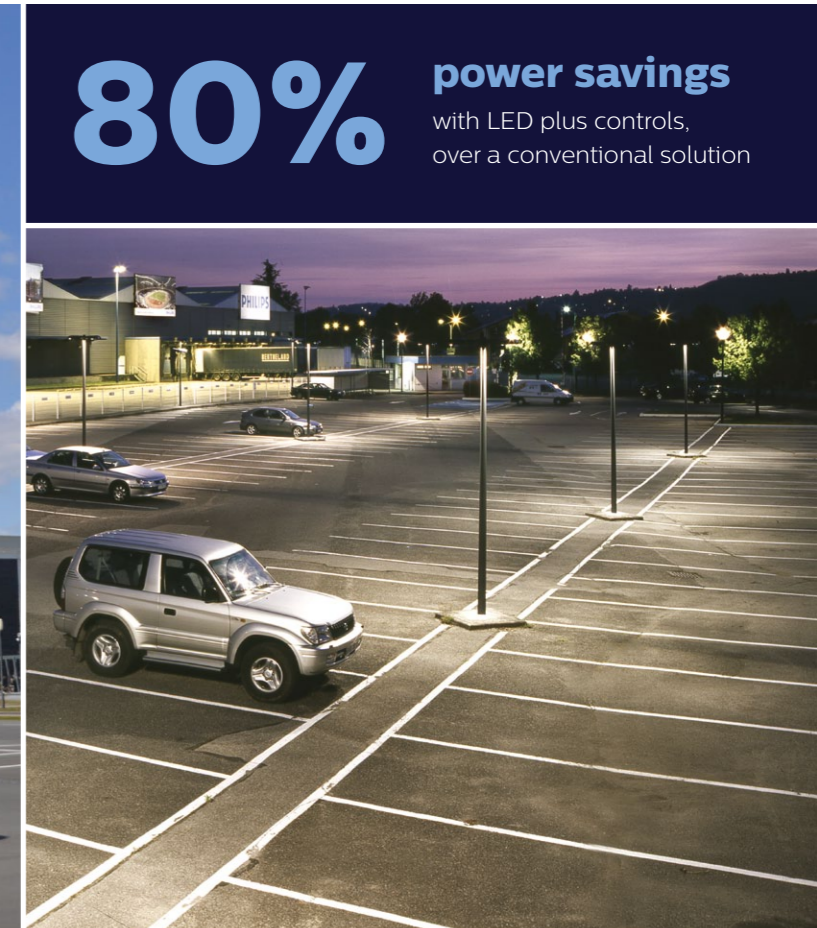
This modern design choice blends harmoniously with its environment, using state-of-the-art, mid-level LEDs to increase visual comfort for motorists, cyclists and pedestrians. Compared to conventional lamps such as HPL mercury, SON-T and PL-L compact fluorescent, TownGuide is very energy efficient and can achieve a reduction of up to 66% in terms of usage.

Option 3



ClearFlood

If you're looking for high energy savings and a fast return on investment, ClearFlood is an obvious choice. You can select the exact number of lumens you need for your application and have the reassurance that you get more lux for your Euro than with other products on the market. ClearFlood is easy to install and retrofit, as it uses the same electrical installation and poles as your existing light points.



80% power savings
with LED plus controls,
over a conventional solution

Comparison table

	Eav (lux)	U0	System power per pole (W)	W/m ²	W/m ² /100lux
Milewide² LED	12	0.32	71	0.25	0.21
TownGuide	11	0.25	74.5	0.18	0.16
ClearFlood	20	0.41	160	0.27	0.13
Conventional	11	0.26	122	0.47	0.43

Light on demand control system

Our impressive control technology allows groups of light points to be switched up and down depending on the presence of people and vehicles. As a result, you can control your energy consumption by ensuring that lighting is kept to a minimum when there's no one around.

You can operate the system stand-alone, without connecting it to a remote dashboard or worrying about a segment controller. What's more, you can connect it to other Philips solutions which handle asset management and remote monitoring.



Lighting **beyond** illumination

Light is something we often take for granted and, in a busy office environment, it can easily be overlooked. There is increasing evidence, however, for the role it can play in developing wellbeing, enhancing brand identity and promoting connectivity.

You're looking for low-impact lighting that makes your employees feel better and inspires them to be more productive. With the right system design, proper commissioning and attention to the comfort of users, it's possible to transform your workspace in ways that simply weren't possible in the past.

Intelligent lighting systems also have an important part to play in helping you reduce costs and

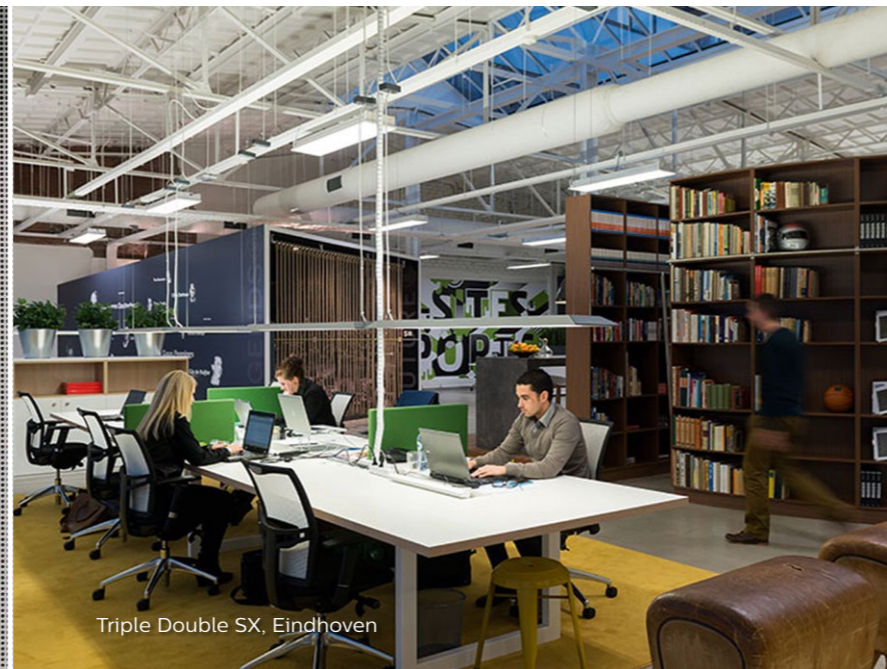
carbon footprint. In a world of financial pressure and increased environmental concern and regulation, it's essential to address what is undoubtedly one of the major contributors to your energy bill.

When you think of lighting, you now need to think beyond illumination.

Make the connection



Abd. Neckersuhl, Germany



Triple Double SX, Eindhoven



Le Village by Credit Agricole, Paris



How digital lighting is entering a new era

Offices have been transformed over the past century. We've moved from people working autonomously at individual desks to a world of open-plan collaboration.

In fact, in the 21st century, all kinds of new themes and priorities have emerged when businesses are considering how they organize their workplaces. Health and wellbeing. The environment. Employee empowerment and digital collaboration.

It's this shift from analog to digital that has perhaps made the biggest mark.

'Connected Lighting' means that every light point is part of an integrated system. You can provide high-quality illumination, while also creating a universal platform for delivering information and targeted services. We can now envisage an office in which the lighting systems are

sensing, anticipating and responding to the changing needs of the people that use them.

The net result is greater personalization, safety and productivity.

And the direct financial and environmental benefits are strong too. Imagine being able to harvest data on energy and occupancy through your lighting system, for instance. The resulting analytics can help you transform your efficiency and create a business better able to meet the challenges of your competitive market.

It's even possible to use your lighting system as 'GPS' – guiding visitors around buildings via their smartphones.

The connected office has now arrived.

Gateway Community college, Denmark



Bring your office to life

Dynamic, changing content to reinforce your brand

This system is easy to fit but can have a spectacular impact, as it allows you to create breathtaking interior spaces and display dynamic, changing content.

The system comprises Philips luminous textile – multi-colored LEDs seamlessly integrated with sound-softening fabric panels. These panels are finished with patented Kvadrat Soft Cells to maintain constant tension on the fabric within the aluminium frame. Even when you switch your dynamic content off, the rich colors and high quality of the textiles provide a striking effect.

One of the most exciting features of Large Luminous Surfaces is that they can be arranged in numerous ways to bring each space alive. With standard and custom sizes, you can scatter panels across a wall or even stagger them on a staircase.

Use our standard portfolio of content to add decorative effects or a particular ambience. Alternatively, adapt the Surfaces to reinforce your brand identity. With our Content Manager application, it's easy to configure your luminous textile panel, creating, editing and uploading your own video.



“

We wanted this room to affect the mood, to be delightful and to be remembered, and also to create some sort of attraction.”

Patrick Cuozzo, Head of Real Estate Projects, Crédit Agricole

Crédit Agricole, Caen, France



A unique way to define your building

Le Village by Credit Agricole, Paris



OMA - Architecture Biennale Venice,
The Elements of Architecture, Venice, Italy

“

Luminous Carpets creates atmosphere, provides information and above all, through its dynamic effect, it offers a feeling of safety.”

Federico Martelli, OMA/AMO researcher, designer of the exhibition 'Elements of Architecture'



Now, any floor can potentially be turned into a dynamic canvas. Thanks to LED lighting from Philips and a specially-designed light-transmissive carpet from Desso, the whole way you think about your office space can be instantly changed.

With Luminous Carpets™, you can use light to guide people intuitively around the building, increase safety by marking escape exits at floor level and turn what would otherwise be boring corridors into attractive connecting routes.

The highly-durable, luminous carpet is complemented by a LED lighting unit, which is easily programmed via

an app. The designers have created a product which is resistant to wear and tear and can cope with heavy loads. It is even easy to install on a range of underlying floor surfaces and can connect with your existing electrical and IT infrastructure.

One of the most striking features is the ability to display useful information on the floor, keeping wall spaces simple and uncluttered. Why not update visitors on waiting times, display a personal greeting to important guests or even count down the minutes until the end of a meeting?

Haworth showroom



One solution across light and sound

When Philips and Ecophon work in partnership, there's a unique blending of perspectives. Soundlight Comfort Ceiling integrates comfortable LED lights with superior sound absorption to enhance wellbeing and performance in your office.

This application is ideal for open office spaces and consists of emitting LED tiles, sound absorbing tiles, a control box running OccuSwitch DALI and the Connect grid system, which is exposed to allow each tile to be easily demounted. It has an even and uniform surface appearance, is easy to install and maintain and brings you both functional lighting and task lighting in one solution.

The LED technology is highly energy efficient at 65-70lm/W, comparable to the best TL5 systems

on the market. It enhances the wellbeing and productivity of employees by providing more natural light, balanced light distribution, reduced glare and high diffuse vertical light levels.

The overall perception is that the room appears bigger, thanks to the better-lit walls and ceiling. And because light is now part of the overall architecture of the office, the clutter above your employees' heads is reduced as well.

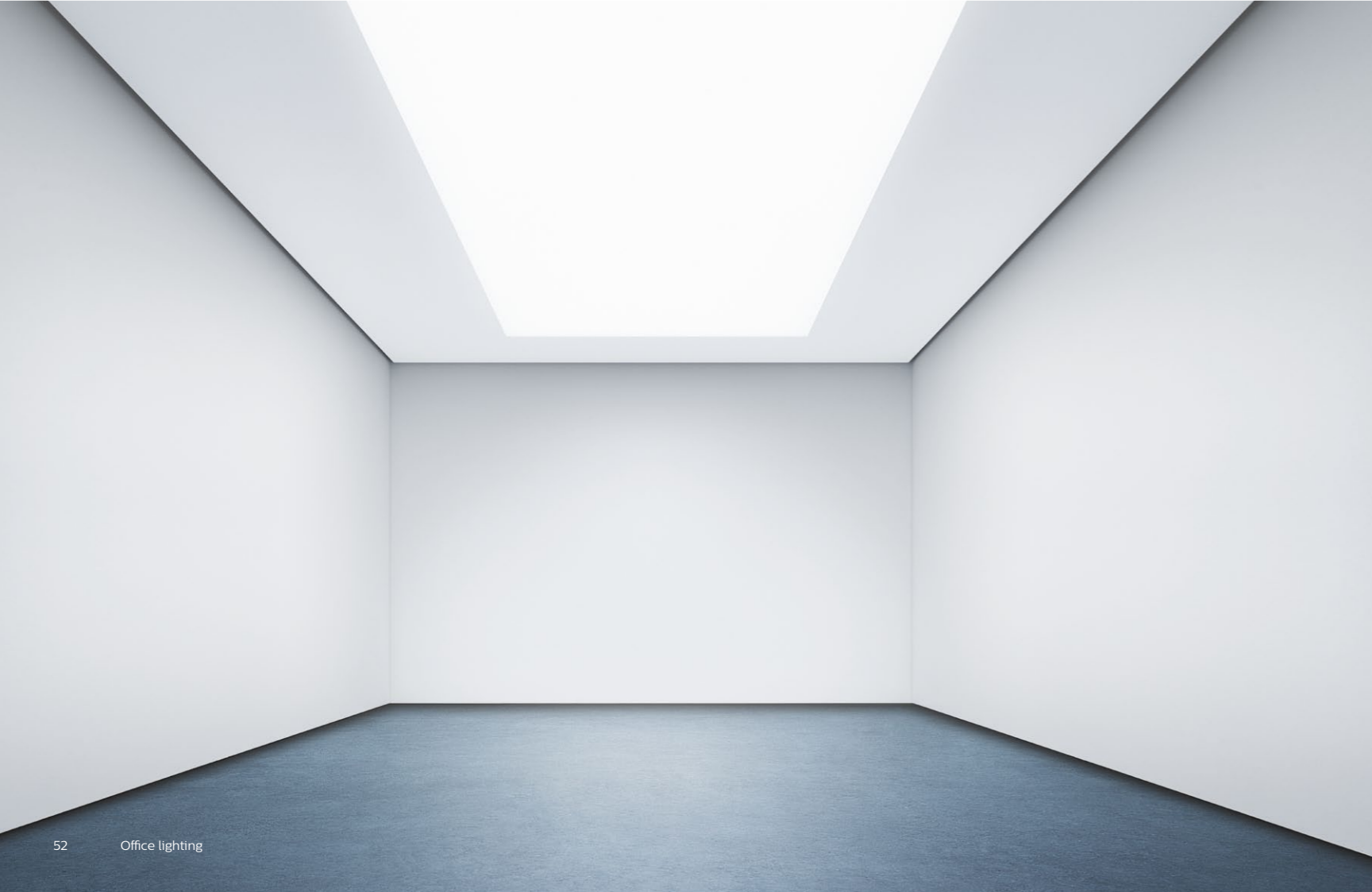
The result is a tranquil and comfortable look and feel. The light feels diffuse and multi-directional, as if it comes from everywhere.

Haworth showroom



A greater sense of
wellbeing

Your ceiling as a
**blank
canvas**



Light that comes from an invisible source

One interior, one cohesive space. A beautiful homogeneous light source. That's the thinking behind Philips OneSpace – a truly revolutionary, made-to-measure panel which allows you to forget about traditional ceiling design.

The technology integrates LED lights with textile to create a white ceiling surface, where the source of the light isn't visible. Not only is this wonderfully appealing from an aesthetic point of view, but you benefit from uniform light distribution, so it's highly functional too.

The panel is ultra-thin at 12 cm and can be created in any size up to 10 x 3 m. Whether free-hanging, ceiling-mounted or recessed, it creates a remarkable impression on entering a room.

The covered backing of OneSpace is dust and insect repellent and the product has been designed for ease of installation and maintenance. What's more, it can integrate perfectly with your building management system.

OneSpace exceeds industry safety standards for both fire and mounting, as it is composed of incombustible glass fiber and aluminium and carries an A2 fire-class safety rating.

“

We were asked to develop a light source with the feeling of daylight. The end result is amazing. The amount of light... I don't see any light source. I only feel the light.”

Wim Weekamp, Senior technologist

Evaluating performance of LED luminaires

If you're going to have confidence in the performance of your LED luminaires, you need to be able to evaluate them – not only at the outset, but over time. How can you be sure they will retain their rated characteristics?

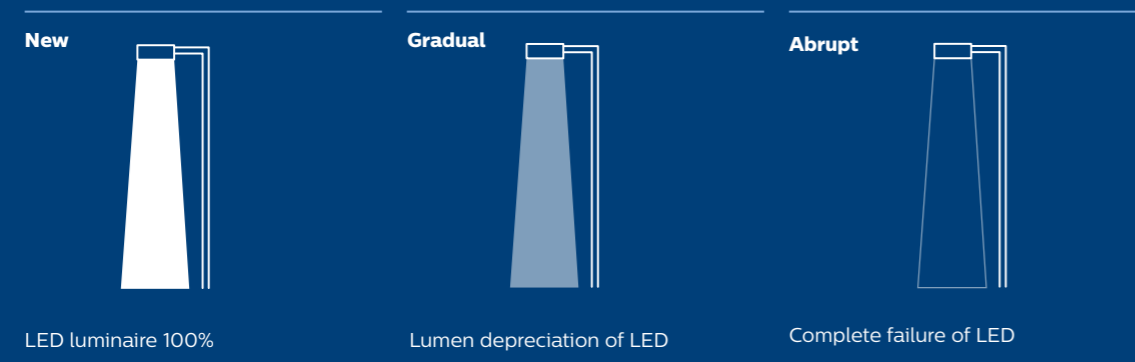


Figure 1 – Over time performance

Gradual light output degradation relates to the lumen maintenance of a luminaire over time and tells you how much of the initial lumen output is maintained. The lumen depreciation can be the result of optical elements degrading, as well as individual LEDs providing less light or giving no light at all.

Abrupt light output degradation describes the situation in which the LED luminaire no longer gives any light at all because the system, or one of the critical components, has failed.

LED luminaires and modules are sophisticated products consisting of many components. System reliability is an important parameter to consider in relation to expected long life. The luminaire will last as long as the component used with the shortest life. There are several critical components of a luminaire that influence the system reliability.

The IEC lifetime metric therefore also specifies 'Time to Abrupt Failure', which takes into account failure modes of critical components in the LED luminaire design.

The abrupt light output degradation of a population of LED lighting products at a certain point in time is called Time to Abrupt Failure and is expressed as L_0C_y . Time to Abrupt Failure describes the situation in which the luminaire no longer gives any light at all. Abrupt failure, denoted by L_0C_y , is the lifetime where light output is 0% for y% of the population. Abrupt failure of the luminaire has taken place.

' L_x ' describes the lumen maintenance: L_0 means that the LED luminaires of this certain type give 0% of their initial light output. ' C_y ' describes the percentage of the population for which this is true.

The example $L_{10}C_{10}$ reflects the age (in hours) at which 10% of the population have failed abruptly.

Unfortunately, the industry has not yet reached consensus on what critical components have to be taken into account when calculating Time to Abrupt Failure. Therefore, Philips Lighting has decided not to publish this value as long as there is a risk of apple-to-pears comparison.

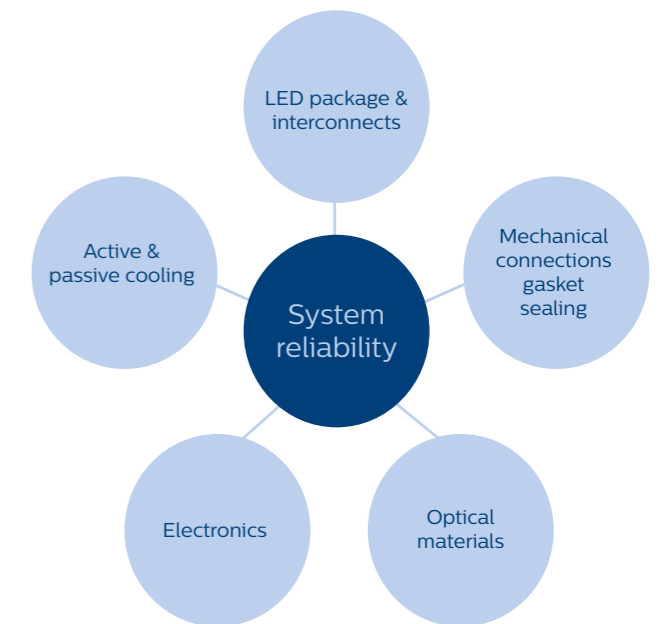


Figure 2 – Critical components LED based luminaire

The IEC lifetime metric for LED luminaires is based on 'Useful Life' and 'Time to Abrupt Failure':

1. Gradual light output degradation / Useful Life

The gradual light output degradation of a population of LED lighting products at a certain point in time is called 'Useful Life'. It is generally expressed as L_xB_y – the length of time during which y% of a population of operating LED luminaires of the same type fail to provide at least x% of the initial luminous flux.

' L_x ' describes the lumen maintenance: L_{80} means that the luminaires of this specific type still give 80% of their initial light output. ' B_y ' describes the percentage of the population for which this is true.

The example $L_{80}B_{50}$ reflects the age (in hours) at which 50% of the population have failed parametrically (producing less light than 80% of initial flux, but still operating).

2. Abrupt light output degradation / Time to Abrupt Failure

Besides light output degradation (Useful Life), there are other factors to consider when evaluating performance over life.



What Philips Lighting publishes on 'initial' performance

To benefit from our standard development work in the IEC, initial performance specifications for all our general LED lighting luminaires are measured in compliance with the appropriate performance standards.

1. Initial rated input power (in W)
2. Initial rated luminous flux (in lm)
3. Initial LED luminaire efficacy (in lm/W)
4. Luminous intensity distribution
5. Initial Correlated Color Temperature (CCT) in K
6. Initial rated Color Rendering Index (CRI)
7. Initial rated chromaticity co-ordinate value and expected tolerance (x,y) < x SDCM

Initial specifications of all LED luminaires are specified at an ambient temperature of 25°C.

What Philips Lighting publishes on performance over time

The 'Over Time' performance specifications of Philips LED luminaires are calculated using the IEC lifetime metric for LED lighting products.

For indoor LED luminaires, Philips Lighting will publish two IEC-compliant quality criteria:

1. number of hours that correspond to the Median Useful Life values $L_{90}B_{50}$, $L_{80}B_{50}$ and $L_{70}B_{50}$;
2. the driver failure rate* at 5000 hours.

For outdoor LED based luminaires Philips Lighting will publish two IEC-compliant quality criteria:

1. number of hours that correspond to the Useful Life value $L_{80}B_{10}$;
2. the driver failure* rate at 5000 hours.

'Over Time' life claims are specified at an ambient temperature of 25°C with 12 burning hours per day and a number of switches in line with the main application.

* NOTE: As soon as there is industry consensus on what failure modes of critical components to include in the calculations, Philips Lighting will publish the Abrupt Failure Value belonging to the number of hours specified for the (Median) Useful Life values mentioned above. For specific projects, tailor-made L_xB_y and L_0C_y calculations are available upon request.

