Philips Lumiblade

The World of OLED Lighting

Light & Building 2014 Edition
Light —

an important and indispensable part of our lives and our world. Light affects our moods, improves our well-being and allows us to experience and achieve more.

The fascination with light has never ceased.
More than just a new source of light
For the first time in the history of lighting consumers can enjoy an entirely new form of light. Light from the just 1.8 millimeter (~ 0.07 inches) thin Lumiblade OLED has its own characteristics that leave anything seen until now in the shadows.
As soon as it is turned on, the entire surface of the OLED delivers pleasant, non-dazzling light at a quality that other light sources and systems cannot achieve.
All shapes, all colors

With its Lumiblade OLEDs, Philips offers numerous variations of the new light source right out of the box. Whether square, round or rectangular – Lumiblade OLEDs impress not only with their light, but also with the variety of shapes and colors.
Having worked closely with designers, architects and artists, we know that enough is not always enough. Especially when it comes to custom projects, the choice of light source cannot form a constraint. Rather, the source of light should integrate seamlessly into the concept without limiting it. That is why we manufacture custom-made OLEDs, suitable for any lighting project. Upon request, in any color, and even with structure. In doing so, we are setting new standards with this new light source.
No wonder, that a large part of the electrical energy produced today is used for lighting. And the figures are dramatic. Worldwide almost 20 percent of the electricity is used for lighting. At the same time the energy for lighting accounts for six percent of the world’s greenhouse gases. This is about 1.9 billion tons of carbon dioxide (CO₂) or about 70 percent of emissions from all passenger cars worldwide. (Source: United Nations Environment Program). By using energy-saving lighting – such as OLEDs – these figures can be reduced significantly. The UN is even talking of halving them.

Although OLEDs are still a relatively new lighting technology, they already show today, that they will be far superior to conventional lighting systems in terms of efficiency and power consumption. They follow LEDs in setting new standards in this area.
Not only green because of efficiency

**Efficiency and longevity**
Philips Lumiblade OLEDs last over 30 times longer than inefficient incandescent light bulbs. Tests have shown that OLEDs will become about as efficient as LEDs already are. These provide up to 80 percent better efficiency. So the energy savings with OLEDs compared to the traditional light bulb are obvious. In addition, the manufacturing process of this new light source is very efficient as well, making the OLED a true all-rounder when it comes to efficiency.

**Recyclable**
OLEDs consist of almost 100 percent glass. Therefore they can easily be recycled at the end of their operating life. Philips Lumiblade OLEDs also meet the European Union’s stringent RoHS and REACH directives. With OLEDs, users do not only get a very attractive surface light source, but also a particularly green one. An increasing number of lighting solutions in which OLEDs are used are coming onto the market in the near future. With each of these solutions users ensure a reduction in their electricity bills. And a reduction in global energy consumption for lighting.

**Light output**
OLEDs are surface light sources, making a diffuser screen which scatters the light unnecessary. This has a big advantage because with conventional light sources up to 70 percent of the light output is lost by the system. Not with OLEDs. Here the efficiency of the light source equals the system efficiency.
Experience in working with light has been one of Philips’ core competencies for over 120 years. With the arrival of the new Lumiblade OLED technology a new dimension has been achieved. Never before has a source of light had such unique characteristics and integrated into other materials so easily. No wonder then that Philips has offered this fascinating technology since 2008 in different variations and levels of integration. This means light designers, artists and even OEMs have access to the light source of the future – today.

Components

The light source of tomorrow – available today
Philips offers its new lighting technology in a number of geometric shapes that are suitable for most applications and installations. Moreover, OLEDs are a true raw material that can be integrated seamlessly into any design. Since we maintain a large stock of most of these OLEDs, delivery takes just a few days. This means this new lighting technology can even be used in time-critical lighting projects.

Designers and those interested have access to OLEDs in their original form in the Lumiblade shop at www.lumiblade-shop.com. An ideal opportunity to get familiarized with the new light source. Philips Lumiblade also offers the appropriate electronics as well as further advice.
Philips Lumiblade OLED GL350

The best of both worlds

OLEDs never fail to impress with their particularly natural light. They have found many friends, especially in the interior design industry. The new Philips Lumiblade OLED GL350 Panel is the first of its kind to be strong in the field of functional light. With dimensions of 124.5 by 124.5 millimeters (~4.9 by 4.9 inches) and with a luminous flux of 200 lumens, the new OLED delivers enough light to be used, for example, in a table lamp or other functional lamp. With its high homogeneity, and as the first OLED suitable for general lighting purposes, this is what users have been waiting for.
Philips Lumiblade
OLED Panel Brite
FL300

Functional OLED light

With its new “Brite” OLED series, Philips is now also paving the way for the use of OLED lighting in functional situations. The Brite FL300 is the first representative of this new series and has impressive performance specifications for OLED panels, providing 300 lumens over a good 12 cm² at an efficiency of over 50 lumens per watt. This makes it the brightest commercially available OLED in the world. Shipping from the third quarter of 2014, the Brite FL300 will be available in a variety of integration levels. This makes it the ideal introduction to the world of OLED lighting for OEMs, for example. The Brite FL300 has already begun to show what it can do, and has been chosen by Italian furniture manufacturer Riva1920 for use in its first light: the K Blade. Philips themselves are also using four of these OLEDs in their first OLED luminaire, which will be launched in spring 2014.
Lumiblade
Undercabinet
OLEDs

Being extremely thin, OLEDs are virtually made to do their job subtly below shelves or wall units. Unlike traditional light sources, which are difficult to hide, OLEDs remain invisible until they are needed – then they spread their natural, even light across the depth of the room. On a shop shelf the light not only looks better – it also has practical advantages. Thanks to its illumination at depth, the owner is suddenly presented with more attractive sales areas than before. The changeover to modern lighting technology is made even easier by the use of Lumiblade Undercabinet OLEDs. The plastic frame in a choice of white, black or silver contains not only a Brite FL300 OLED, but also the electronics required for operation. Simply mount the housing where you want it, connect to the power and you’re done. It couldn’t be any easier.
Philips Lumiblade
SI210.105

Strikingly subtle

Whether at an events center, an office building or a hotel, many visitors would be completely lost if not provided with the right information in the right place – especially in an emergency. However, previous solutions have mainly stood out for the way they clash with their architectural surroundings – and have not been self-luminous. With the Philips Lumiblade OLED Panel SI210.105, there is now a solution on the market that is strikingly subtle. Thanks to its thickness of just a few millimeters, the shape of this OLED – which has been designed especially for use in signage – melts into the background while its direct, full-coverage light provides easily visible information and orientation.
Philips Lumiblade OLED Driver

Electronics and light source from the same provider

LED drivers such as those in the Philips Xitanium series are currently still being used to power OLEDs. This is a good solution, but the properties of OLEDs are so specialized that LED drivers cannot realize their full potential. That is why Philips Lumiblade offers drivers that have been developed specially to meet the requirements of OLEDs. The Philips Lumiblade D230V 80W/0.1-0.5/1A/28V TD/A 8ch driver, for example, can be used to power up to eight OLEDs simultaneously at a maximum brightness of 2,400 lumens. At the same time the built-in power supply unit means that the driver can be plugged in to the mains anywhere in the world without an adapter (except in Japan). The world’s most compact OLED driver offers users an easy introduction to the world of OLED lighting, e.g. as a component in a light with functional lighting levels.
Solutions

One lighting technology – unlimited lighting solutions

See light as more than just a source of light – see it as a material. This is the exciting idea that guides our actions at Philips Lumiblade. A new light source is only as good as the imaginations of those who have created it. Even at the very early stage of development, Philips placed a high value on working together with lighting and product designers. Philips calls this approach “open invention”. It has resulted in us being able to offer a range of solutions based on OLED technology early on. And this at a time when OLED devices are just beginning to take off. The following pages provide an overview of our exciting solutions with this new and unique light material.
LivingSculpture
3D module system

Modular light installations of the third kind, designed by Christopher Bauder/WHITEvoid

Planning a light installation is particularly challenging when the design is not only in one plane, but when free space is built in with light. Until now, successfully realizing such a project required extensive planning and enormous technical expertise. With the LivingSculpture 3D module system designed by Christopher Bauder/WHITEvoid, Philips Lumiblade has created a system that allows the user to focus on one thing: the design. The need for technical expertise is eliminated by the modular system, which consists of base plates and connecting rods. The connecting rods are available in different lengths and allow even complex three-dimensional structures to be created very quickly. Depending on the requirements of the project, any number of base plates can be put together to rapidly create a fascinating 3D light sculpture.
Dimensions of base plate: 32.4 x 32.4 cm (~12.7 x 12.7 in)
Number of holes for rods per base plate: 16
Size of OLEDs: 7.6 x 7.6 cm (~2.9 x 2.9 in)
Color temperature: white (CCT approx. 3,000 K)
Length of rods available in intervals of 2.5 cm (0.9 in): 2.5 cm (0.9 in) – 40 cm (15.75 in)
Weight: approx. 3.5 kg (~7.7 lb) including OLEDs and rods
LivingShapes interactive mirror

An aura of OLED light

*Lumiblade OLEDs* are the source of extremely attractive, natural light. But they can do a lot more. The best example of this is the LivingShapes interactive mirror. At first glance, the square grid of OLEDs appears simply to be a light installation.
In fact it is intelligent sensor technology combined with a mirror. It senses when someone moves close. The LivingShapes interactive mirror detects the outline of the person and switches off the OLEDs that are in the field of vision of the observer.
In this way, the light installation transforms into a mirror which immerses the viewer in an aura of OLED light. The mirror image is both shadow-free and very natural. This makes the mirror ideal for high-standard hotel rooms or as a special accessory next to the cloakroom in lounges or lobbies.

Size of the mirror: 75 x 75 x 4.8 cm (~29.53 x 29.53 x 1.89 in)
Number of OLEDs: 64
Perception range: 10 – 150 cm (~4 – 60 in)
LivingShapes interactive wall

Light installations based on the modular system

It has never been so easy to create stunning interactive OLED lighting installations in such a short time.

The LivingShapes interactive wall is the perfect example of how beautiful and interactive OLED light can be. The OLEDs seem to go on and off at random. But it soon becomes clear that the wall reacts to what either a hidden camera in the wall sees. Or what a microphone detects. Movement and sound is then translated into light shapes, bathing the room in an atmospheric light. This is the very light that makes the new lighting technology so distinctive. Even when all the OLEDs are alight, the light is warm and pleasant rather than glaring.

The interactive wall is based on an ingenious modular system that eliminates the need to individually connect hundreds of OLEDs to each other. Instead, the user simply utilizes integrated OLED panels equipped with sixteen OLEDs. Constructed as a plug-and-play system, the interactive wall comes as a preconfigured system with 72 modules.
The interactive wall has four modes.

**Interactive video mode:** The built-in camera translates objects and motion in front of the device into OLED light shapes.

**Interactive sound mode:** With a line-in or microphone input, the system translates audio signals or ambient sound into shapes and motion.

**Text display mode:** Text can be displayed in different fonts and appearance modes (scrolling, fading in and out, etc).

**Mood lighting mode:** The OLEDs light up as wonderful patterns and shapes transforming the interactive wall into a calm backdrop.
Dimensions of the wall as shown in the pictures:
255 x 140 x 7.9 cm (~ 100.4 x 55.1 x 3.1 in)
Consisting of 72 modular merged 4 x 4 OLED panels
Total of 1,152 OLEDs
Average power consumption 400 – 810 W,
depending on brightness and use.
Projects

Technology and design in perfect harmony

Close cooperation between designers, lighting experts and the experts from Lumiblade has led to the emergence of fascinating applications based on the new lighting technology in recent years. From kinetic light installations to attractive ranges of lamps – the projects are truly wide-ranging. On the following pages you will learn more about these extraordinary applications based on Lumiblade OLEDs.
Pixelate is inspired by the undulating movement of a manta ray sliding across the air. It combines its movement and shape with modern chrome finishing and OLED light, creating an unique element. It is made combining several weaved layers of stainless steel resulting in a surface of randomly combined light and metal pixels. Each OLED panel has an independent movement, the light can directed slightly to the sides or entirely upwards. The user can rapidly shift between direct and indirect light accordingly to the desired mood and also change the original combination of OLED and metal pixels. Pixelate takes maximum advantage of the thin Lumiblade GL350 panel featuring an ultra-flat design. Its design also lends well to combine more than one Pixelate to create unique scenarios.

Pixelate
by Pablo Alvarez
for Birot
Application: Pendant · Materials: Stainless Steel · Finishing: Mirror Chrome · Maximum Height: 1500mm (adjustable) · Color Temperature: 3200K · CRI: > 85 · Beam Angle: Very diffuse · Luminous efficiency: 40 lm/W · Dimmable: Yes · UL/CE marking: Yes
Philips Lumiblade
OLED Luminaire

The first Philips OLED luminaire comprises four Brite FL300 OLEDs. Depending on where they are used, customers can combine as many of these units as they wish. The light is designed for use in offices and retail, and fulfills all the regulations and requirements for brightness and non-glare. In order to do so, the Brite FL300 does not illuminate at maximum brightness, instead providing only 500 lumens of light out of a possible 1,200. Dimming the lights in this way has the advantage of extending their service life, allowing them to be lit for around 50,000 hours – a good 50 years of normal use – and even then, they will only have lost around 30 percent of their original brightness.
Old and new collide in the elegant „K Blade“ desk light from Italian furniture manufacturer Riva 1920. The old is provided by the Kauri wood, which can only be found in New Zealand, in the swamp of the same name. After aging for around 48,000 years buried under peat, it obtains a strikingly beautiful color and grain. The new, on the other hand, comes from the lighting technology in the lamp: Riva 1920 has chosen the power of the Brite Fl300 OLED for its first desk light.
Emdedesign, the design studio of Frankfurt artist Thomas Emde, presents under the label OMLED a whole series of lights that places the Brite FL300 series at the center of the design of the light itself. Emde set himself the task of developing an honest, pure and natural design for such a light. He deliberately wanted to avoid expensive design objects, and aimed instead to create a functional, affordable light that could get close to people without bothering them. This is why, apart from the OLED modules, the design is made almost exclusively from glass. The connection between the glass and the OLED is based on a patent pending procedure developed by emdedesign. At the same time, this merging of OLED and glass allows more light to be released. The series of lights has been designed as a standard lamp, desk lamp and a pendant lamp, each of which is available in different versions with varying numbers of OLEDs. This allows each user to select the light with the perfect size and output to suit their needs.
The “Flaps” ceiling lamp designed by the Milan based manufacturer Turnlights is a good example of both functionality and aesthetics. The ceiling lamp uses 18 GL350 OLEDs as arranged in a multi-tile system. Each OLED panel can be rotated on two axes, permitting the user to control the direction and amount of light distributed. “Flaps” provides a comprehensive lighting solution, making 360° ambient lighting possible without moving the lamp from its place. “Flaps” works perfectly in every location where elegant lighting is required – above a table, in a bar or as a reading light in the lounge. Thanks to its moveable parts and ultra-thin OLEDs, Flaps offers endless lighting possibilities with style.
Application: ceiling lamp
Material: aluminium
Available in polished, satinised or bronzed aluminium
OLEDs used: 18 GL350
Dimensions: 147 x 40 x 6 cm (58 x 15.8 x 2.4 in)
Together with Audi and Philips, lighting designer and artist Michael Hammers has designed 15 OLED lights for a very special conference room: the “Winter Garden” at the Audi Forum Ingolstadt. The room is located in close proximity to the vehicle delivery and the company’s museum and is used by the Supervisory Board among others. The lights themselves are so thin that they are almost invisible from the side thanks to the OLEDs used. The light really appears to float in the air. Only the necessary power cable gives a subtle hint to the light source. Each of the 15 lamps has a frame structure of aluminium and a stainless steel front panel in which each of the 36 Lumiblade GL350 OLEDs are enclosed. The room is illuminated by 3,900 lumens per lamp, so in total there are about 58,000 lumens. This is so much light that additional light sources could be dispensed with. This is the first conference room worldwide to be solely illuminated by OLEDs, showing how quickly this modern lighting technology has come of age.
Dimensions of the lamps:
Width: 79.1 by 79.1 cm
Height: about 5 mm
Material: aluminum frame, stainless steel front panel
Number of OLEDs per light: 36 Lumitouch GL350
Lumens per lamp: 1,888
Total volume: 38,220
Total number of OLEDs: 540
OLED luminaires by Pugnale & Nyleve

The Italian designer duo Pugnale & Nyleve have committed themselves to the form of the OLED light. Several luminaires have been created under their aegis, each of which has boasted a personal touch that sets them apart from the ordinary. Take the „Cherubino“, for example: a small statue of an angel sits atop two Lumiblade GL350 OLEDs mounted on a right-angle bracket, perfect for subtle bookshelf lighting. The angel itself is solid, milled aluminum. „Vittorino“, on the other hand, uses four Lumiblade GL350 OLEDs that face inward instead of outward, illuminating a feather in their center. Both lights are also connected, and can be integrated without any trouble into an existing wireless lighting network (e.g. Hue) and controlled using an iOS device.
LivingSculpture
kinetic installation

Light floating in the air

Lumiblade OLEDs have many great features, but one particularly stands out in this kinetic installation: their thinness of just 1.8 millimeters (~0.07 inches). This means that for the first time moving art installations can be designed that literally cause light to float without the light source being directly visible. The smallest shape in the installation, designed by Christopher Bauder/WHITEvoid, is made by the OLEDs – in this case triangles – and this is reflected in the overall form of the installation. The 36 OLEDs on each of the 24 triangular bases form a larger triangle and the final form is created by superimposed triangles. Even when it is not moving, the 5 by 6 meter (~16.4 by 19.7 feet) kinetic installation is impressive. However, it really draws attention to itself when the 24 triangles are set in motion and more than 860 OLEDs light up the room. Computer-controlled winches allow breathtaking spectacles to be created that quickly draw an audience, for example in a large company’s reception area or in an airport terminal.
The triangles can also be grouped differently in an individual configuration, for example a line, a small hexagon or a triangle.
The British designer Jason Bruges has created a stunning OLED light installation with approximately 450 square OLEDs on behalf of Philips Lumiblade. The name: Mimosa. Bruges connected groups of five OLEDs together to form flower heads that react to the viewer using sophisticated electronics. If a hand comes near, the flower closes, and it does not open until the hand has moved away. When combined with the graduated dimming of the OLEDs, the result for the viewer is a fascinating play of light.
After his work on Mimosa, Jason Bruges knew that his next project also had to incorporate OLEDs. The British sports car manufacturer Aston Martin commissioned him to create a light installation intended for one special purpose: the delivery of the exclusive One-77 sports car. Instead of a silk cloth covering the car, new owners are initially met with darkness and silence. Slowly, however, more than 750 OLEDs accompanied by appropriate music begin their play of light to gradually reveal the body of the sports car.
The largest OLED lamp in the world has been hanging in Berlin since August 2011. The luminescent piece was designed by Kardorff Ingenieure Lichtplanung and is located in an elegant and artistic venue. At over seven meters (~ 23 feet) in height, it fills the stairwell of a spiral staircase in the foyer of an administrative building in the famous Berlin street, Unter den Linden. 24 chrome aluminum frames, each containing 16 Lumiblade OLED modules, are stacked above each other and surround a diagonal glass centerpiece with a two-tone finish. Various colors and reflections appear, depending on the viewer’s perspective. During the day the glass surface turns blue, purple and transparent, while at night it becomes a shimmering gold mirror flooded in the attractive light of 384 OLEDs.
Height: 7.20 m (~ 23.6 ft)
Number of chromed aluminum frames: 24
Total number of OLEDs: 384
OLED area: approx. 2.4 m² (~ 25.8 ft²)
Glass centerpiece with dichroic coating
OLED chandelier by Rogier van der Heide

Rogier van der Heide is not just a lighting designer with a first-class reputation, he is also the vice president and chief design officer at Philips Lighting and designed this OLED chandelier. A total of 20 GL350 OLEDs prove that OLEDs can not only look beautiful but also deliver truly functional light. The design is reminiscent of two DNA strands wrapped around each other.
Only the colored power cable gives a subtle hint that a light source must be hidden somewhere in Edge. The OLEDs shine light downwards, making Edge a very elegant desk or bedside lamp.

The British architect Amanda Levete designed this elegant lamp – Edge – which contains two transparent plastic Lumblade modules. Levete designed the lamp so that the wafer-thin OLEDs are not visible at first glance. This results in the viewer having the impression that the flat, folded steel strip produces light itself.
Form follows function. Or in the case of O’Leaf by Modular Lighting Instruments – the technology. The design of the lamp was inspired by organic forms – something found more and more in the world of design. What look like three plant leaves from a distance are actually three very elegant lamps, each containing a rectangular Lumiblade OLED. The O’Leaf family is available as a wall, ceiling, floor or table lamp in white or black.

O’Leaf by Modular Lighting Instruments
The German designer Daniel Lorch created Moorea, the first OLED table lamp to deliver 240 lumens of light and thus to have reached a functional level. It illuminates the table powerfully and makes the potential for this exciting future technology tangible. The new adjustment mechanism has no joints. It is based on the elasticity of a thin strip of shape memory alloy, which is stretched with a nylon-reinforced power cable into the desired position. Since the power cord is an integral part of the adjustment mechanism, there is no need for a cable guide. For a quick change of direction, the light can also be rotated on its own axis. The proportions of Moorea are based on the proven dimensions of the classic banker’s lamp, which can often be found on American desks and in libraries.

Materials: shape memory alloy sheet (FG2), anodized aluminum, nylon-reinforced power cable
2 Philips Luminide GL350 OLEDs
Dimensions: 25 x 17 – 48 x 34 – 52 cm
(~ 9.8 x 6.7 – 18.9 x 13.4 – 20.5 in)
Design and technology merge in this suspended ceiling light designed by Trilux. The Obliq OLED lamp combines minimal weight with extreme stability thanks to the carbon-fibre material used to create it. Fourteen specially developed Lumiblade OLEDs form the central element, and make the design, which incorporates open spaces and organic geometrics, possible thanks to their low installation depth. There are also four high-power LED modules, two of which shine light directly and two that shine indirectly. The interplay of OLED and LED, and the resulting interaction of homogeneous and high-contrast light, creates a completely new light experience.
Dominic Harris is a renowned interactive artist and lighting designer whose chosen palette of materials is lighting, interaction design, and electronics. His “Oled Moon Chandelier” is the first of a series of chandeliers and bespoke commissions that are based on the new OLED chandelier module. As one moves about the chandelier it at times appears to consist of nothing more than crystals balls which begin to reveal a never-ending beautiful array of crescent shapes generated by the OLEDs within. The incredible flatness of the Lumiblade OLEDs is used to great effect, except in a radical inventive step where an OLED has been embedded within a precisely turned and hand-polished acrylic sphere. This marriage of flatness and volume is responsible for the ephemeral and mesmerizing light that at times is invisible, and at other times appears larger than life.
Materials: turned acrylic, carbon fibre, laser cut and turned aluminium

OLEDs: 19 Philips Lumiblade OLEDs Dot Tall White (~ 7 cm each (~ 2.75 in))

Bespoke electronics and controls.

Dimensions: 80 cm diameter with 80 cm vertical drop (~ 31.5 x 31.5 in)
The “Victory” table lamp from Novaled combines innovative OLED technology and the finest materials to create a unique light design. Ultra-slim light arms incorporate Lumiblade OLEDs in a V-shape inspired by the world-famous victory sign made by the British prime minister Winston Churchill. The lamp is made from high-quality full carbon fiber, a high-tech material that is not only extremely sturdy but also allows extreme forms. Few other materials can incorporate the flatness of an OLED into a design as well as this space-age material. The “Victory” is available in different colors and with a piano lacquer or carbon fiber finish. All of the models are created with elaborate craftsmanship. The characteristic carbon pattern is as unusual and unique as a human fingerprint.
Material: carbon fiber, four Lumiblade OLEDs
Dimensions: approx. height 35 cm (13.8 in),
width 20 cm (7.9 in), depth 40 cm (15.7 in)
OLED color temperature: 3,500 K / CRI ~ 80
Light output: 120 lm
Luminescent carpets and ceilings. Windows that provide bright daylight even when it is dark outside. Glimmering luminescent clothes. When designers and scientists start talking about organic light emitting diodes (OLEDs), their imagination knows no bounds. Indeed, the future holds in store infinite ways of using OLEDs. But even today, these ultra-flat light sources have already managed to raise light to a brand new level.
OLEDs – raising lighting to a new level

OLEDs compared to other light sources
OLEDs are not the next generation of LED. They are an independent new light source. OLEDs are surface light sources, rather than spotlights. Just a mere 1.8 millimeters thick, OLEDs diffuse a warm, pleasant and homogeneous light over the entire surface. More precisely, OLEDs are composed of ultra-thin layers of organic semiconductors and color molecules, which are embedded between two layers of glass. When a voltage is applied, the organic layers begin to light up. Manufacturing OLEDs involves one of the most sophisticated high-tech processes around and can be compared with the manufacture of PC chips. It begins with an extremely thin, transparent and electro-conductive oxide layer composed of indium tin oxide (ITO) being applied to a glass slide. This layer forms the anode. The subsequent stages of the process involve the application of the organic layers, although the term ‘organic’ has nothing to do with plants or animals in this case. Contrary to LEDs, OLEDs are manufactured using chemically organic material – in other words, carbonate-based components. The final stage incorporates an aluminum cathode, whose prime function is ensuring that the OLED works like a mirror when it is turned off. When voltage is now applied to the OLED, electricity flows from the anode to the cathode and makes the layers in the middle light up. The color that we see depends on the voltage, as well as – more importantly – the material that has been embedded in the organic layers.

Surface light sources versus spotlights
The main difference between LEDs and OLEDs is that OLEDs, contrary to LEDs and other common light sources, diffuse their light from the source right across the entire surface, hence the term ‘surface light sources’. Light from OLEDs is characterized by a natural softness, whilst diffusing nicely and not dazzling. Due to their extreme flatness – below 1.8 millimeters –, OLEDs can be integrated in many different surfaces and products and allow light sources to be designed in a wide range of shapes and sizes. OLEDs can be fully dimmed right across the spectrum – less electricity means less light, more electricity makes it brighter. No sophisticated electronics are required – standard potentiometers are all that they need. OLEDs are available in virtually all colors, not to mention in the sphere of high quality white light. Alongside standard shapes, companies such as Philips also provide sophisticated shapes as well as structural OLEDs. As a result, dreams of technical light designs can be given wings very easily. In terms of size, OLEDs have also been gaining ground in recent years, with dimensions exceeding 100 cm² becoming increasingly common.

The light of the future, today
The international trend towards sustainability is having an enormous impact on the development of energy-saving light sources. This means that energy-saving lamps and halogen spotlights will gradually disappear from the market. The word on everyone’s lips is OLED. The organic light diodes are considered to be THE surface light sources of the future. Experts, architects and designers all believe that OLEDs will be the next big thing in the lighting industry over the next few years.

OLED benefits at a glance
• OLEDs are very thin and are quick and effective at converting energy into light – without heat. This is why they are ideal for integration
• OLEDs provide a beautiful, all-round homogeneous light
• OLEDs are available in every possible color
• OLEDs are extremely energy-efficient and energy-saving
• OLEDs are free from harmful substances and are re-usable
• OLEDs can be connected to largescale lighting systems that offer strong, even luminosity

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The main difference between LEDs and OLEDs is that OLEDs, contrary to LEDs and other common light sources, diffuse their light from the source right across the entire surface, hence the term ‘surface light sources’. Light from OLEDs is characterized by a natural softness, whilst diffusing nicely and not dazzling. Due to their extreme flatness – below 1.8 millimeters –, OLEDs can be integrated in many different surfaces and products and allow light sources to be designed in a wide range of shapes and sizes. OLEDs can be fully dimmed right across the spectrum – less electricity means less light, more electricity makes it brighter. No sophisticated electronics are required – standard potentiometers are all that they need. OLEDs are available in virtually all colors, not to mention in the sphere of high quality white light. Alongside standard shapes, companies such as Philips also provide sophisticated shapes as well as structural OLEDs. As a result, dreams of technical light designs can be given wings very easily. In terms of size, OLEDs have also been gaining ground in recent years, with dimensions exceeding 100 cm² becoming increasingly common.

The light of the future, today
The international trend towards sustainability is having an enormous impact on the development of energy-saving light sources. This means that energy-saving lamps and halogen spotlights will gradually disappear from the market. The word on everyone’s lips is OLED. The organic light diodes are considered to be THE surface light sources of the future. Experts, architects and designers all believe that OLEDs will be the next big thing in the lighting industry over the next few years. Alongside the traditional uses of standard lighting, OLEDs provide additional ways in which structural lighting (signage) and special lighting can be used. The field of photography will be no exception either, with OLEDs pushing traditional light sources aside when holohedral, homogeneous illumination is needed alongside extremely high quality light. This, in addition to the lack of heat generation, makes OLEDs predestined for such applications.

Product Performance
• up to 50 lm/W in different shades of white
• up to 10,000 cd/m² brightness
• up to 30,000 hours lifetime (at 70% initial brightness)
• between 0.7 and 1.8 mm thin
• up to 200 cm² surface
You can find more information about Lumiblade OLEDs and the applications this new lighting technology makes possible online. Simply visit one of the sites below to be enchanted by this unique light source.

www.lumiblade-experience.com
www.twitter.com/lumiblade
www.facebook.com/lumiblade
www.youtube.com/user/Philipslumiblade

If you want to experience our OLEDs in person, visit one of our free Lumiblade workshops. The dates and locations can be found online.

You can order Lumiblade OLEDs and the LivingShapes interactive mirror at www.lumiblade-shop.com

Feel free to contact us via info@lumiblade-experience.com