



NOVALUME

LED FAQ

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Turnkey Lighting Solutions

QUESTIONS	ANSWERS
What is LED?	LED stands for Light-Emitting Diode. An LED is a light-emitting diode, or an electronic light source also referred to as a semiconductor. An LED does not contain a filament that can burn out or be shaken loose, such as those found in traditional light sources. Nor does it have a glass bulb that can break. Within an LED, electrons jump between two semiconductor layers and, in the process, release energy which causes a fluorescent material to illuminate.
What are LEDs used for?	LEDs are used in almost all electronics today. All standby lamps are typically LEDs. They can generate images on TV screens as pixels in video displays when clustered together. Today, LEDs are used as room, workplace and decorative lighting, as well as in street lamps. There are also retrofit LEDs that can replace nearly all types of traditional light bulbs.
Can LEDs replace all old light sources?	There are many LED light sources for various purposes and nearly all traditional light sources can be replaced by LEDs.
Do LED light sources become hot?	LEDs use relatively little energy and almost all the energy is converted into light. In other words, only a small proportion of the energy is converted into heat. The light beam itself does not become hot, but the LED's back part, cooling coil and electronic components can become hot.
Is an LED the same as a compact fluorescent lamp?	No, LEDs are not compact fluorescent lamps (CFLs) in the traditional sense. An LED uses less energy than a CFL and is much better at rendering colours. Furthermore, LEDs illuminate immediately when switched on and do not need to warm up first as some CFLs do.
Is it easy to replace fluorescent tubes with LED tubes?	Yes. All fluorescent tube light fixtures can also be fitted with LED tubes. All you need to do is remove the starter switch and insert the LED tube. However, if you have a fixture containing HF ballasts, the fixture will need to be modified. An additional 10 % energy saving can be achieved by removing the HF/choke ballasts from all light fixtures when switching to LED tubes.
Must my light fixture have a reflector to use LED tubes?	LED beams are more directional than conventional fluorescent tubes. This means you will not need a reflector. LED tubes often provide more light than fluorescent tubes as fluorescent tubes illuminate in all directions, including directions where no light is needed.
Do LED tubes produce the same amount of light as fluorescent tubes?	Yes they do. But they consume considerably less energy.

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How hot is the light?	LEDs do not emit infrared radiation (heat) in the light beam itself. LEDs are therefore perfect for illuminating objects that cannot tolerate heat, such as cosmetics, chocolate and other delicate items. In contrast to many types of halogen lamps, LEDs can be integrated into furniture and other objects without posing a fire risk.
Is LED light cold?	The color of the light, what is referred to as the light temperature, is measured in degrees of Kelvin (K). LEDs come in many varieties and are available in warm color tones (color temperature) ranging from 1,800 K (equivalent to candlelight), to 2,300 K (equivalent to traditional light bulbs) and up to 6,500 K, which is perceived as cold and is most comparable to fluorescent lights.
How long can an LED last?	The lifespan of an LED tube is approximately 50,000 hours. After 50,000 hours, the luminosity will have declined by around 20 %. Newer LED light sources and lamps have a lifespan of approximately 100,000 hours.
How does temperature affect LED efficacy?	LEDs perform best when it's cold. The better the cooling and the colder the surroundings, the more light is emitted from the LED. Very high temperatures can decrease the brightness, while frost can actually increase the brightness.
Are LEDs more energy efficient than other light sources?	Yes. LEDs use only about 10% of the energy used by ordinary incandescent bulbs. In other words, an LED can save 90% of the energy consumed by incandescent bulbs, 50-70% of the energy consumed by halogen bulbs, 40-50% of the energy consumed by fluorescent tubes and 25-30% of the energy consumed by CFLs.
Are LEDs "good" lights?	Just like other light sources, LEDs come in many varieties. LED light quality can be determined from several parameters, including how well it renders colour. Colour rendering is measured using the Colour Rendering Index (CRI) and is also denoted by the value CIE Ra. The scale ranges from 0-100, where 100 is the highest possible value and 0 the lowest. Sodium-vapor lamps, which are used on motorways, in tunnels and at industrial complexes, have a CRI between 20 and 50. The CRI of CFLs and fluorescent tubes is 70-80. Halogen lamps are at 90-97 and traditional light bulbs are at 98. LEDs range from 70 to 97, depending on the product and application. Newer LEDs are typically over 80 and high-quality, more expensive LEDs have a CRI between 90 and 95 with some reaching 97. In Europe, bulbs are required to have a CRI of at least 80 to obtain an A+ grading. It is therefore always a good idea to look for the A+ grading, as this automatically denotes a CRI value over 80. CRI 60 = Below average colour rendering, CRI 80 = Good colour rendering, CRI 90 = Very good colour rendering.
How do I compare ordinary light bulbs with LEDs in terms of illumination and energy consumption?	A light source emits light. Luminosity (or luminous flux) is measured in Lumen (lm). A 100 watt incandescent bulb emits approximately 1,200 Lumen. A 9 watt LED light source also emits 1,200 Lumen. These two light sources are equal in brightness. But the incandescent bulb's power output is 12 lumen/watt, while the LED light source's power output is a massive 105 lm/w. This means that the LED light source emits more than 10 times the amount of light per watt of energy. One should therefore compare lumen against lumen when comparing ordinary bulbs with LEDs. Or convert this to lm/€ to get a true picture of the cost-saving and energy-saving benefits of LEDs.

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Start Benefiting from a New LED Lighting
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