

FACTSHEET

Light emitting diodes (LED) has number of applications. They include devices, medical appliances, indicators and signs, emergency vehicles, flash lights etc.

Devices, medical applications, clothing, toys

- Remote controls, such as for TVs and VCRs, often use infrared LEDs.
- Glowlights, as a more expensive but longer lasting and reusable alternative to Glowsticks.
- Movement sensors, for example in optical computer mice
- The Nintendo Wii's sensor bar uses infrared LEDs.

In optical fiber and Free Space Optics communications.

Toys and recreational sporting goods, such as the Flashlight

Lumalive, a photonic textile

In pulse oximeters for measuring oxygen saturation

LED phototherapy for acne using blue or red LEDs has been proven to significantly reduce acne over a three-month period.

Some flatbed scanners use an array of red, green, and blue LEDs rather than the typical cold-cathode fluorescent lamp as the light source. Having independent control of three illuminated colors allows the scanner to calibrate itself for more accurate color balance, and there is no need for warm-up.

Computers, for hard drive activity and power on. Some custom computers feature LED accent lighting to draw attention to a given component. Many computer manufacturers use LEDs to tell the user its current state. One example would be the Mac, which tells its user when it is asleep by fading the LED activity lights in and out, in and out.

Sterilization of water and other substances using UV light.

Lighting

Grow lights composed of LEDs are more efficient, both because LEDs produce more lumens per watt than other alternatives, and also because they can be tuned to the specific wavelengths plants can make the most use of

Light bulbs, Lanterns, Streetlights, Large scale video displays, Architectural lighting

Light source for machine vision systems, requiring bright, focused, homogeneous and possibly strobed illumination.

Motorcycle and Bicycle lights Emergency vehicle lighting, Flashlights, including some mechanically powered models.

Backlighting for LCD televisions and displays. The availability of LEDs in specific colors (RGB) enables a full-spectrum light source which expands the color gamut by as much as 45%.

Stage lights using banks of LED's as replacement for incandescent bulbs. LED's produce less heat so LED stage lighting is cheaper to operate and reduces the risk of fire considerably.

LED-based Christmas lights have been available since 2002, but are only now beginning to gain in popularity and acceptance due to their higher initial purchase cost when compared to similar incandescent-based Christmas lights. For example, as of 2006, a set of 50 incandescent lights might cost US\$2, while a similar set of 50 LED lights might cost US\$10. The purchase cost can be even higher for single-color sets of LED lights with rare or recently-introduced colors, such as purple, pink or white. Regardless of the higher initial purchase price, the total cost of ownership for LED Christmas lights would eventually be lower than the TCO for similar incandescent Christmas lights since the LED requires much less power to output the same amount of light as a similar incandescent bulb. More to the point, LEDs have practically unlimited life and are hard-wired rather than using unreliable sockets as do replaceable bulbs. So a set of LED lights can be expected to outlive many incandescent sets, and without any maintenance.

Indicators and signs

Status indicators on a variety of equipment are used which include traffic lights and signals, Exit signs, Railroad crossing signals, Continuity indicators and Elevator push-button Lighting.

Thin, lightweight message displays at airports and railway stations, and as destination displays for trains, buses, trams, and ferries.

Red or yellow LEDs are used in indicator and alphanumeric displays in environments where night vision must be retained: aircraft cockpits, submarine and ship bridges, astronomy observatories, and in the field, e.g. night time animal watching and military field use.

Red, yellow, green, and blue LEDs can be used for model railroading applications

In dot matrix arrangements for displaying messages.

Because of their long life and fast switching times, LEDs have been used for automotive high-mounted brake lights and truck and bus brake lights and turn signals for some time, but many high-end vehicles are now starting to use LEDs for their entire rear light clusters. Besides the gain in reliability, this has styling advantages because LEDs are capable of forming much thinner lights than incandescent lamps with parabolic reflectors. The significant improvement in the time taken to light up (perhaps 0.5s faster than an incandescent bulb) improves safety by giving drivers more time to react. It has been reported that at normal highway speeds this equals one car length increased reaction time for the car behind. White LED headlamps are beginning to make an appearance.

As a medium quality voltage reference in electronic circuits. The forward voltage drop (e.g., about 1.7 V for a normal red LED) can be used instead of a Zener Diode low-voltage regulators. Although LED forward voltage is much more current-dependent than a good Zener, Zener diodes are not available below voltages of about 3 V.