

Going Green With



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Exploring Low-Energy Lighting Sources

In an effort to reduce energy usage, many new low-energy lighting sources have hit the market in an attempt to replace inefficient incandescent light bulbs. Let's take a look at some of the options available.

Of the new types of low-energy lighting, compact fluorescent lamps (CFLs) are probably the most recognized. CFLs are best identified by their spiral shaped glass tubing. An ENERGY STAR qualified CFL bulb lasts about ten times longer than an incandescent bulb and uses 75 percent less energy.

How do CFLs work? The glass tubing of the CFL contains argon and a small amount of mercury vapor. Invisible ultraviolet light is generated when an electric current passes through the tube. The inside of the tube is coated with a fluorescent coating, called phosphor, that reacts with the ultraviolet light and emits visible light. Each bulb contains a ballast to regulate the current; more energy is needed when the bulb is first turned on. Because CFLs contain mercury, they should be properly recycled at the end of their useful lives, and care must be taken to properly clean up a broken CFL.

CFLs on the market today vary in quality and price. Many are available for prices comparable to incandescent bulbs. However, bulbs at the lower end of the price spectrum tend to have shorter lives than top-of-the-line CFLs, and most are not dimmable. If you are willing to pay a little more, you can purchase dimmable CFLs that will work with a standard incandescent dimmer. Dimmable CFLs are available in screw-in types that fit a standard incandescent socket, and as new GU-24 bulbs require a special socket. GU-24 CFL bulbs have two tips protruding from the bottom that fit into matching holes on the socket; the bulb is then twisted once to secure it in the socket. These types of bulbs are popular in places like California that have stricter energy efficiency codes and require hardwired, high-efficiency light sources.

CFLs are best used for providing the warm glow of ambient lighting, but can also be used for task lighting,

A relatively new player in the field of high-efficiency lighting is the cold cathode fluorescent lamp (CCFL). CCFLs come in styles that look like traditional household bulbs, globes, or flame tips. They cost more than incandescent bulbs, approximately \$12, but can save an average of \$33 over their life. A 40 watt incandescent bulb has an average life of 750 hours, but a CCFL can produce the same amount of illumination using only 8 watts and will last 25,000 hours.

CCFLs are not yet widely available, but can be special-ordered through lighting specialty stores or purchased online. CCFLs are able to dim down much more than CFLs and come in a wide variety of color temperatures. CCFLs have a wider variety of low wattage lighting options than CFLs, and their swirls are thinner. CCFLs are the best choice for decorative lighting.

Another low-energy light source that is emerging in the market is the light-emitting diode (LED). If properly designed, LEDs can contribute the same energy savings as CFLs without any ultraviolet radiation or exposure to Mercury. LEDs are available in both screw-in and hardwired bases.

LEDs are solid-state lighting sources. The movement of electrons through a semiconductor material illuminates tiny light emitting diodes to produce light. A small amount of heat is released backwards into a heat sink. Unlike incandescent and CFL bulbs which can waste 90 and 80 percent respectively of their energy in the form of heat, well-designed LEDs are basically cool to the touch. LEDs can be mounted separately or grouped together in clusters. Unlike other light sources which throw light in all directions, LEDs emit light in one specific direction. They are excellent for accent lighting and can be used for task and ambient lighting as well.

No matter what your lighting requirements are, you should be able to find a low-energy source to meet your needs. With technological advances and new products in development, the future looks bright in the world of low-energy lighting.

Sources

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