



Lighting the Way

The myriad applications of LEDs in your home

GIVEN THE FERVOR WITH WHICH HOMEOWNERS ARE EMBRACING GREEN TECHNOLOGIES, IT'S NO SURPRISE THAT LED LIGHTING IS EXPERIENCING ITS MOMENT IN THE SPOTLIGHT. These small, energy efficient bulbs add to a home's ambiance in ways incandescent or halogen lights never could.

LED – light emitting diodes – are not a new form of lighting, but one just coming into its own. The technology has been around since the 1960s, but was largely restricted to utilitarian uses such as indicator lights on appliances and computers, small electronics

displays and holiday string lights.

Options for utilizing LEDs at home are far more sophisticated than just installing twinkling Christmas lights all year round. The simplest application is to use them as pathway lights both inside and out. Small and unobtrusive, they can be embedded into paving stones, stairs or rails. And unlike newly popular energy efficient compact fluorescents, LEDs can easily be set on dimmers and used with controls to light stairs and hallways.

Use LEDs to create pathways within your home as well. A single touch of a bedside

switch can illuminate an LED strewn path from bed to master bath, letting you go to and fro without bumping into furniture or blinding yourself in the process. Or light the way for a small child, using LED path lighting to help them through any nocturnal rambling.

Then go one step further and add a little drama. Gregory Kay, president of lighting design firm Lightology, recommends placing LEDs on walkways and then having them programmed to slowly brighten, greeting you or a guest as they move along the path. "The lights gradually welcome you. It's en-



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ergy efficient and it provides some theatrics,” he says. “The real thrill (of good lighting) is the theatrical effect you get that lets you enjoy being in the space.”

A good many professional lighting designers actually hail from theatrical backgrounds. Kay learned the craft from Paul Gregory, the man whose checkerboard dance floor design in Saturday Night Fever became a symbol of an era. But good lighting design goes far beyond creating a flashy dance floor. Lighting helps to set the mood or scene, and creates a truly welcoming environment.

And with LED, lighting designers can do it in color.

Advancements in the past 10 years let the bulbs burn brighter and brought about the addition of color. “Our two cofounders noticed that LEDs had gotten bright enough to use as illumination and then in colors,”

explains Kevin Dowling, vice president of innovation at Philips Color Kinetics. “First were red, green and blue, and then you could mix them to make any other color.”

The colored lights are most commonly found in commercial spaces to create artistic installations or add drama to landmarks. Public buildings, hotels and casinos all use LEDs to add color illumination or messaging. Bars, restaurants and nightclubs use LEDs to make walls, displays and even bars or tabletops glow. At home, these effects are easily obtained by mounting colored LEDs inside cabinets, under shelving or behind mounted mirrors or frames. Unlike halogen bulbs, LEDs give off very little heat, making them safe to use in closed spaces.

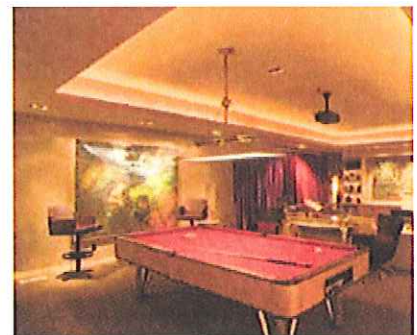
They can also create dramatic effects, making LEDs perfect for home theater applications. Go beyond the obvious pathway

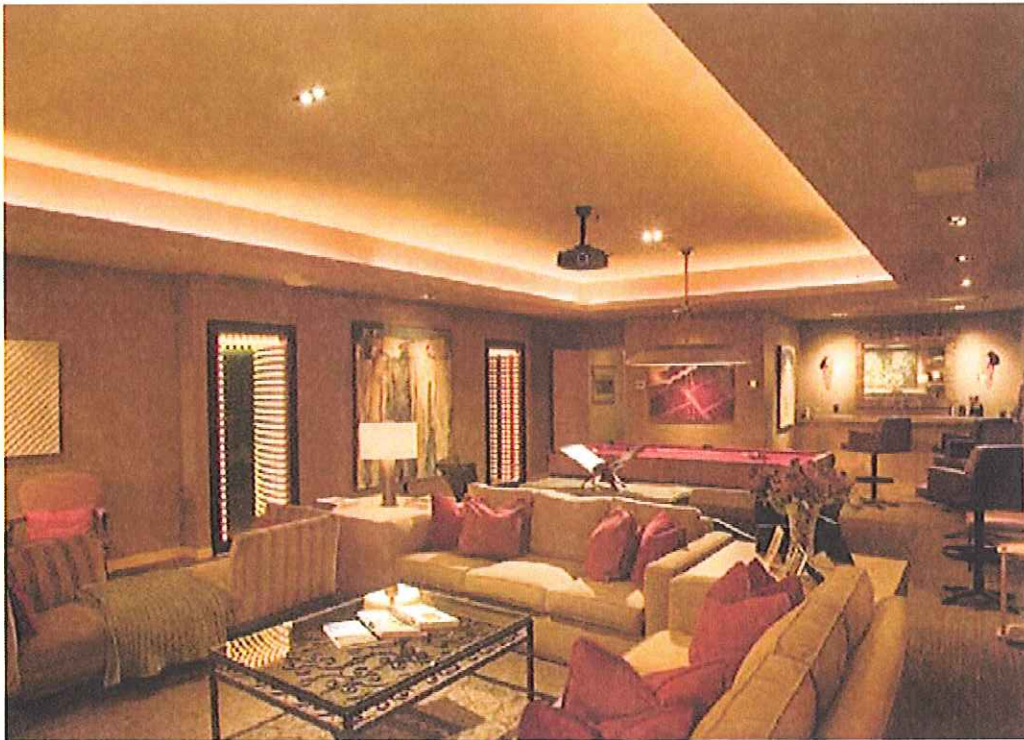
lights embedded in walls and stairs and try using them to create pools of light around the periphery, to illuminate art or movie posters, or as task lighting to better see a control panel, remote control or TV guide.

With colored LEDs, the limits are mostly of the imagination.

Add twinkling constellations to the ceiling like a regal movie palace of years past and let color wash across the universe in glowing reds, oranges, blues and purples. Bathe the walls in light and host colorful light shows, making a home theater or media room far more than just moving images on a screen. In fact, color LED installations in a home theater can create more drama and special effects than found in many commercial theater spaces.

“When you enter the room, it’s all about the wow factor,” says lighting designer Robert





Singer, of Aspen-based Robert Singer and Associates. "We have the ability to change the mood using tricolor LED technology, setting the mood anyway we want using layers of light, like a painting."

Home theaters of this caliber really benefit from control systems that have preprogrammed settings to dim or brighten lights, lower a screen and operate the film. While most light displays stop once the movie starts to play, Phillips Color Kinetics is introducing LED displays that are meant to complement, rather than compete with, the action onscreen.

Color Kinetics parent company Philips uses LED technology called Ambilight that casts a soft glow of light onto the wall behind a flat panel TV screen. This can help alleviate eyestrain and improve picture clarity by minimizing stark contrasts between the screen images and backdrop. Philips recently added color-changing abilities to its Design Collection Series of TVs, thanks to LED lighting. "They've combined (the lighting) with the content, making the media more immersive," says Dowling. "If there's

an explosion or a red alert, you're not just viewing it through the window of a screen. That red alert is in your room."

Now imagine using this application with video games and music; all your media becomes more interactive. "The virtual actually becomes more real and brings the environment of the film and TV into the room," Dowling says. Redoing a master bath? There are new shower fixtures with LED technology that make the water change color with its temperature, while LED light tiles and blocks add a twinkling effect to the spa.

Consider the psychological benefits of adding more color to your interior. The concept of color, or chromo therapy, can be controversial in scientific circles, but interior designers regularly rely on colors to set moods. Red is invigorating, blue calming and yellow bright and cheery. Some colors are said to promote good digestion, others help lull you to sleep. Using colored LEDs throughout the home can elicit similar effects.

LEDs are also being used to combat seasonal affective disorder, or SAD, the general malaise that afflicts those in sun deprived

climates. The technology can mimic a time of day or season. "We can change the color temperature of the light source from warm to cool, just like the sun throughout the day," said Dowling. "Very often, the lighting in your home isn't the same light as the light outside the window, even on sunny days. LEDs can match true daylight."

Simply put, Singer believes there are no drawbacks to using LED in the home. "The benefits really far outweigh any detriments," he says. "Especially in a media room environment where you need to have pretty minimal heat output. In the past, we used incandescent or quartz for indirect lighting, both of which generate a lot of heat. LED is a much cooler source with more flexibility." And it uses far less power. "With LED, we're replacing something that's 30-watts per linear foot with something that's 4-watts per linear foot," explains Singer.

"Energy conservation is such a huge issue and LEDs are improving so rapidly, we believe they will replace fluorescents," predicts Dowling. "Today, they already surpass incandescent and halogen (bulbs), and in some cases even compact fluorescents." LEDs also work better with dimmers than compact fluorescents and are mercury free, making them safer to dispose of and a more environmentally responsible lighting option.

Like most new technologies, LED bulbs will cost more, but last longer and draw less power, lowering energy costs over time. According to Kay, an LED bulb might cost \$20 more than a halogen one, but might last 40,000 hours. "In a typical house, that's 20 years," he says. "And it may draw just 5-watts. That's 15-watts less than halogen."

But as with other new technologies, do your homework. For more involved installations, work with a reputable lighting designer in your area (the International Association of Lighting Designers, www.iald.org, has an online directory). Some brands are better than others. Lighting designers thoroughly test each one as it comes to market. "What you know today changes like computer technology," Kay says. ■