

Case Study: LEDs Chosen for Energy Efficiency

When Sentry Equipment Corp., a supplier of sampling components and systems, decided to build its new 60,000-square-foot facility, a major concern was energy-efficiency. The company went to great lengths choosing everything from window glass to office ceiling materials to create an energy-efficient environment. Naturally, they chose LED technology for most of their artificial lighting, and decided to use LEDs from Cree.

Sentry's CEO Mike Ferrell intended to leverage the latest advancements in energy-efficient building and lighting technologies and 100-year-old incandescent lighting technology did not fit into his vision. He stated that you would have to be "brain dead" not to choose LEDs.

The Oconomowoc, Wis. based building's original lighting design indicated that the company's fixtures would require about 75 kW. The company reduced their actual lighting load, however, to only about 30 kW through effective use of daylighting and high-efficiency artificial lighting, mainly LED technology.

Sentry estimates the cost for the new lighting technology has an approximate 1.3 year payback, starting in August 2007, when the installations were completed. They also project their annual lighting energy costs to be more than \$13,000 less than estimated in the original lighting design.

Not all of Sentry's lighting comes from LEDs. They use some fluorescent lighting. However, LED lighting provides the greatest energy savings. Where the company installed LED lighting, they reduced energy consumption from 14.6 kW in the original plan to an actual consumption of only 3.6 kW.

The company's LED lighting also reduced overall energy consumption since they have a power factor near 90 percent, making it easier for the power company to provide the energy. Overall energy use decreased by 60.5 percent from 75,448 total system watts with original lighting to 29,807 total system watts with new LED lighting.

The energy and maintenance cost savings, as well as the benefit of better aesthetics, are clear. Sentry will save about \$500 per year in parking lot lighting energy costs, not including maintenance savings. Sentry also likes the 50,000-hour life expectancy of LEDs and the absence of hazardous materials.

Sentry's use of LEDs in both indoor and outdoor applications demonstrates the development of LEDs, technologically and economically, as a viable and cost-effective option for businesses. Today, all of Sentry's exterior lighting, except their flagpole, uses LED technology. Fixture company, Ruud Lighting, provided exterior lighting solutions with Cree LEDs for Sentry's parking lot, pedestrian lighting and exterior building lighting.

Inside the building, all decorative, conference-room dimmable cans, restroom and aisle lighting use LEDs as well. Fixture company, LED Lighting Fixtures, provided LED indoor recessed lighting. Again, this case study shows LEDs as ready for wide-scale adoption in both exterior and interior lighting.

Since experiencing the benefits of LED lighting, Sentry has decided that LEDs will be the first choice for all its future lighting installations.

As another example of companies making the full conversion to LED lighting, Cree announced plans to convert all lighting at its Durham headquarters and manufacturing facility to LED lighting and released the results of the first phase of the conversion. The parking lots, entryways, lobby and conference rooms at Cree's headquarters building are now 100 percent lit by energy-efficient, environmentally friendly XLamp LEDs. Cree's LED Workplace conversion validates the energy savings, quality of light and reality that LED lighting is now a viable option for business and residential consumers.

In a study of the energy usage before and after the lighting conversion, Cree confirmed the energy savings of the newly installed LED lights. The findings indicate that in total the new LED lights use 48 percent less energy than the incandescent, fluorescent and high-pressure sodium lights they replaced.

The combination of the energy savings, reduced maintenance and disposal costs and the environmental savings demonstrate that LED lighting is now a real alternative to traditional lighting solutions.

Cree's local utility, Duke Energy, is collaborating with Cree to explore the benefits of LED lighting.

"Our customers are always interested in understanding how to save money through energy efficiency, so we make it our business to support innovative technologies such as LEDs," said Ted Schultz, Duke's vice president of energy efficiency.

"We expect our energy efficiency plans to be approved next year and are committed to having a complete line of lighting solutions available for customers," said Schultz. "At that point, we expect to have programs developed that will take advantage of LED technology."

"Conventional wisdom is that LED lighting is years away from widespread adoption. The truth, however, is that the performance of Cree's LED technology enables real LED lighting solutions today," said Chuck Swoboda, Cree chairman and CEO. "The conversion of Cree's site demonstrates that the LED Lighting Revolution is well underway and will illustrate the benefits in energy savings, maintenance costs and environmental impacts."

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