The Truth in Lighting

By Neal Hunter, Chairman and CEO, LED Lighting Fixtures, Inc.

While LEDs have made headlines based largely on future potential, the industry has yet to deliver a competitive solution for general illumination. Our company, LED Lighting Fixtures (LLF), was created with a mission to accelerate the adoption and evolution of LEDs into high volume general lighting applications so that consumers can realize lower energy and maintenance costs. LLF recognized a need in the market for a high quality LED light offered at a justifiable cost and as a result, we developed a 6-inch down light product generating 650 lumens output from the fixture, operating at 11 watts. The potential market for LED-based lighting is significant as products are expected to provide decades of lifetime under normal operation and use a fraction of the power required for traditional lighting solutions. Also, these products do not contain toxic mercury as do common fluorescent products. So why haven't more companies had the ability to design fixtures to meet the requirements of the general illumination market?

LED component and fixture manufacturers have recently provided misleading performance data about their products to the market and since this data could not be supported by their fixtures; it has caused confusion for traditional lighting markets and the media. As LED fixture claims have under-whelmed the industry, the media has become a victim of the hype and consumers realize that they have other alternatives, leaving LED-based products pledged with a bad reputation. LLF recognizes this gap and concludes that only new technology with truthful measurements can change the way the market views LED-based fixtures.

Much of the misleading performance data reported by LED fixture manufacturers was driven by marketing department demands rather than technology. For example, many of these companies reported lumens per watt information about their products that did not disclose gimmicks used to inflate these numbers. Without disclosing the total cost of operating the fixture, the package type, chip size or measurement techniques, the data is often inconsistent. One performance trick to boost reported results from a power chip is to operate the LED at a low drive current. In this situation, the performance looks great, but the product is not viable based on cost. Other misleading techniques include taking measurements of the fixture instantaneously instead of at thermal equilibrium and simply ignoring losses in power and optical conversion. While these tricks provide good reported results, when the fixture can not sustain this performance, traditional light manufacturers become skeptical of LED claims. To illustrate this point, the Department of Energy (DOE) has now set up testing for many LED-based fixtures and their results reveal a large gap from the reported performance of the manufacturer in many cases. Until LED suppliers stop posting performance results without regard to proper testing or economic realities, lighting fixture suppliers will continue to be frustrated by the lack of viability for LEDs in mainstream applications.

In order for the industry to regain credibility, LED component and fixture manufacturers must use third party testing for their measurements. I also believe that the industry needs a standard format for testing fixtures such as a Fixture Performance Certification (FPC). The FPC should address all of the elements of value including lumens output, color, cost and lifetime. The FPC should be verified by a third party or with an FPC recognized measurement (NVLAP) and consumers should only recognize these FPC results. This testing should include a standard of at least two hours of thermal equilibrium, which measures the wall-plug power input, color temperature, the color rendering index (CRI), the projected lifetime of the product and estimate the price of the product, including the total cost of operation. If this certification is achieved, reported results would be reliable and credibility could be restored to the LED lighting industry. This verification will also eliminate confusion in the marketplace, allow lighting specifiers to design with confidence and educate the media on the true benefits of the technology. The release of truthful mainstream lighting products will create the quickest elevation of standards.

I also suggest that the DOE and the Environmental Protection Agency (EPA) raise the bar on performance and accelerate their timeframes for energy efficiency standards, including Energy Star requirements for LED-based fixtures. For example, LED fixtures must not have lumens per watt ratings that are lower than compact fluorescent (CFL) products. The DOE must also continue a policy of "tough love" for LED components and fixtures with the rigorous testing that now takes place. These and other steps must challenge the LED fixture industry to lead consumers toward solutions that not only save substantial energy, but also call for non-toxic solutions for our country's future. The DOE also should consider modifying and redistributing money to this important technology so that LED companies can focus on cost reduction for LED components. Finally, our government must monitor for violations that restrain free trade as LED fixtures become more competitive to incandescent and CFL solutions.

From our beginning, LLF believed that much of the LED and fixture performance results were flawed and that traditional fixture companies began to ignore this important technology. LLF recognized this gap in the market and filled it with products that are thoroughly tested with results verified by third parties. In fact, LLF's first purchase was an integrating sphere to ensure that our performance was reported accurately. All of our results have been tested at thermal equilibrium and were certified by a third party testing lab (CSA). These tested results include the fixture type, lumens output, wall plug power, color temperature, CRI and lumens per watt.

The future LED lighting market is not guaranteed. As LED-based fixtures begin to compete in the lighting market, CFLs continue to improve their performance and reduce mercury content and incandescent products are firmly established as the incumbent. In order to challenge these traditional lighting alternatives, more "real" LED products must be delivered to the market, which offer comparable brightness, color and impressive efficacy, while reducing lumens per dollar costs.

LED lighting is ready today for many general illumination applications. Early failures have frustrated customers and there is no long term benefit from releasing tricked numbers or unreliable products. The LED industry has the talent to make lighting a reality and can choose to become mainstream or be relegated to niche status.

On February 7, 2007, LLF announced a 6-inch down light product at 650 lumens and 11 watts of wall-plug power. This product will be available beginning May 1, 2007 through a national lighting representative network and will cost less than $75 per fixture. If other companies can increase their performance and reduce cost, the lighting industry will migrate to greater than 75 percent of new lighting products being LED-based within the next five years. The market is ready for the promise of LED technology and it is up to the LED industry to make that a reality.

Neal Hunter is a co-founder and former president, CEO and Chairman of Cree, Inc. Hunter held numerous roles at Cree during an 18 year period from 1987 to 2005. In 2005, Hunter co-founded LED Lighting Fixtures, Inc. to accelerate the use of LEDs in general illumination applications. Hunter also develops residential neighborhoods using custom builders. This experience gives him a unique perspective for applications for LED technology in homes.

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