

SSL Postings

Solid-state lighting has been developing so rapidly over the past few years that it sometimes seems the only constant is its forward progress. The number of applications for which LED lighting products can compete with their traditional counterparts is growing all the time, and performance has continued to improve, to the point where luminaire efficacies on the order of 80-100 lm/W are not uncommon (LED package efficacies can be much higher). Some might consider that "good enough," and wonder why the U.S. Department of Energy (DOE) should continue to focus on improving the quality and performance of SSL, rather than just let the principle of natural selection and survival of the fittest take care of things from here.

The answer is that solid-state lighting is not "there" yet – not by a long shot. Despite the profusion of LED lighting products on the market and the considerable progress that's been made to date, SSL is still at a very early – and quite fragile – stage. Even though the technology has evolved to the point where it can save energy, no energy will be saved unless market adoption occurs. And the keys to market adoption are price and quality – both of which remain prime focal points of DOE's SSL program.

If a product is priced too high, most consumers won't buy it – barring any special offsetting incentives. And although SSL prices have been coming down steadily, overall they remain a major hurdle, being the most frequently cited impediment to adoption. But cost reduction isn't free and doesn't occur automatically. It requires a great deal of effort, with considerable attention paid to good

design as well as to how things are manufactured – which is why DOE supports SSL R&D in both areas. Merely increasing production volume doesn't bring down those costs, but by increasing revenue it allows manufacturers to invest more in R&D. And R&D results in the kind of innovation – new design approaches for volume production and new equipment to maximize yield and consistency – that ultimately brings costs down. While we've seen remarkable cost reductions over the past few years, we know that the rate of reduction will eventually slow down, as often happens when an emerging technology becomes price-competitive.

Just as important to market adoption as price is quality and performance. Poor quality can hinder market adoption as effectively as high price. A recent report by Strategies Unlimited notes that although some countries have more outdoor LED lighting installations, the U.S. has taken the lead in proving the viability of SSL for such applications, where others are seeing a shrinking market because of quality issues. By contrast, here in the U.S. the market for outdoor LED lighting continues to grow, which Strategies Unlimited credits to heightened quality consciousness due to the efforts of DOE, its [Municipal Solid-State Street Lighting Consortium](#), and the Design Lights Consortium.

This calls to mind the adage that attention to quality actually ends up saving the manufacturer money, which is certainly true from a long-term perspective. Not only can higher quality translate into more sales, but a reputation for poor quality can be earned in a short space of time and yet take years to restore – as we learned from what happened when CFLs were first introduced. That's why, for example, DOE has published [revised guidelines](#) on testing and reporting the lifetime of LED luminaires. Those guidelines make a distinction between failures that are due to design and quality problems, and those that result from normal wear-out. The latter are to be expected, but the former call for a return to the drawing board.

Improvements in design and manufacturing reduce cost, which brings down price, which in turn leads to market adoption. Attention to quality and performance feeds that market adoption and ensures that it lasts. For the good of the solid-state lighting industry, the consumer, and our energy future, it's important to keep these factors in focus as we move forward.

As always, if you have questions or comments, you can reach us at postings@lightingfacts.com.
