SSL Postings
U.S. DEPARTMENT OF ENERGY

June 2, 2015

Acknowledging a Sea Change

As we mentioned in these *Postings* a few weeks ago, the biggest takeaway from this year's LIGHTFAIR® International was the prevalence of *connected* products, and the fact that sensors and controls seemed to be everywhere the eye could see. All of this was evidence of the sea change that's taking place within the field of lighting, courtesy of SSL. Whereas lighting has been viewed since Edison's day as a relatively one-dimensional commodity that illuminates spaces, the advent of SSL has created growing recognition within the industry that lighting can fulfill a multiplicity of functions and doesn't have to be static and unchanging.

While it's clear from what we saw at LIGHTFAIR that manufacturers are already embracing this idea and are starting to design their products accordingly, it's not yet clear whether building owners and lighting designers will be as enthusiastic about those products. Infrastructure changes do not happen overnight. Conventional lighting is typically static and unchanging — not by choice, but because of its technological limitations. But SSL is not subject to many of those limitations, such as warmup time — which is opening up whole new dimensions to lighting that were unimaginable a few years back.

Unlike other lighting technologies, SSL can be designed so that it's controllable across multiple characteristics — not just lumen output, but also CCT, chromaticity, and even beam angle. SSL's microelectronic nature makes it not only physically possible, but also economically feasible, to integrate sensors, intelligence, network interfaces, and other functionality that can boost overall energy efficiency and offer a range of other potential benefits and services as well.

There's widespread agreement that SSL — driven by maintenance and energy savings — will eventually become the dominant technology for most lighting applications. Concurrently, lighting could even become the platform for the Internet of Things, which offers a way to connect a wide range of electronic devices to communication networks and is expected to make possible an unprecedented exchange of data. That data exchange will facilitate the development of higher-performing algorithms, which could enable better device and system performance as well as data-driven energy management of lighting and other building systems. And SSL fits into that picture like a piece to a jigsaw puzzle: light sources are ubiquitous in the built environment, making it possible to

build out a dense web of data collection points by integrating sensors into those sources.

Of course, there are a number of hurdles that need to be overcome for solid-state lighting to fulfill its potential in this regard — most of them centering on incorporating it, along with control technologies, into the built environment. But given the challenges SSL has met to date, it's likely to only be a matter of time before we see these things happening on a wide scale. Solid-state lighting is still at a relatively early stage of its development, with the best yet to come. It wasn't long ago that telephones were strictly for talking, whereas today they're sophisticated minicomputers. If you take a step back and look at what's happening across the industry, you'll see that lighting, too, is becoming vastly different from what it was before — and that even the catchphrase "it's not your grandfather's lightbulb anymore" has taken on whole new layers of meaning.

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