

ASSIST Infrastructure Change

Solid-state lighting promises to transform the way we light the world.

That promise is found in solid-state lighting's ability to save energy, reduce maintenance, and change our entire lighting infrastructure. The light-emitting diode (LED), the primary solid-state lighting technology, has been tapped by scientists, government agencies, and others as the next generation light source for general illumination in homes and offices.

Yet, in order for solid-state lighting to be a success, it cannot simply become a replacement for traditional technologies in the traditional manner, i.e., screwing a glass-and-brass bulb into a socket. Lighting must be thought of in new ways—ways that take advantage of the LED's design and benefits.

Infrastructure Change to Reap the Solid-State Lighting Dream

What if building architecture and lighting could be seamlessly integrated to create illumination that is dynamic, personal, and flexible? What would it look like? Over the past 100 years, traditional lighting has acted as an add-on to spaces. Lighting fixtures are hung from ceilings, sit on floors, and rest on tables. The present infrastructure does not allow us to change lighting easily, leading often to poor-quality lighting in our spaces. Electricians must be called, holes cut, walls patched and repainted. The need for cords and cables tethers our use of portable lighting, as well as common electronic devices, to the places where electrical sockets can be found.

Solid-state lighting, however, offers new ways to think about how we light our spaces. This rapidly evolving technology can be embedded into any type of architecture due to its small size, ruggedness, and long life. Its numerous color options and acceptance of dynamic control can create a personal lighting experience to meet any task or ambiance. Its energy-saving qualities mean more sustainability for the future.

From homes to offices, a new infrastructure design will reap the benefits of solid-state lighting: flexibility, energy savings, ease of integration, and dynamic control. Most of all, a new infrastructure incorporating solid-state lighting will mean a future of personal, quality illumination that serves our utmost need for light.



Lighting
Research Center

Demonstrating the Concept

In 2005, the Alliance for Solid-State Illumination Systems and Technologies (ASSIST) and the Lighting Research Center (LRC) designed and built a full-scale vignette of an executive office to showcase the concept for adaptable lighting and to demonstrate the value in easily changing lighting design. The ceiling and walls consisted of thin LED-lighted panels that snapped in and out of a modular DC electrical grid and provided different lighting distributions, including general, task, accent and decorative. The panels could be rearranged simply and rapidly to cater to changing space layouts or personal preference. For example, accent lighting built into a panel can move as easily as the artwork it highlights. The LED panels were controlled by a touch-screen monitor. The end result was flexibility and quality lighting. The concept also can integrate electronics such as TVs, monitors, speakers, and other communications/media equipment.



Field Evaluation

In 2009, the California Energy Commission awarded a Building Energy Research Grant to the LRC to demonstrate this new infrastructure for SSL technology. The project was demonstrated in a Hollywood, Calif., movie studio conference room with project partner OSRAM Sylvania. For more information about the prototype installation and performance evaluation, visit http://www.lrc.rpi.edu/programs/solidstate/or_adaptableSSL.asp.

About ASSIST

ASSIST was established in 2002 by the LRC as a collaboration between researchers, manufacturers, and government organizations. ASSIST's mission is to enable the broad adoption of solid-state lighting by providing factual information based on applied research and by visualizing future applications. On behalf of ASSIST, the LRC conducts research, demonstration, and educational activities. Sponsors include 3M, Acuity Brands, Amerlux, BAE Systems, Bridgelux, Cirrus Logic, Cooper Industries, Cree, Dow Corning, FAA, GE Lighting Solutions, Hubbell Lighting, ITRI – Industrial Technology Research Institute, Intematix, Legrand, LG Electronics, New York State Energy Research and Development Authority, OSRAM Sylvania/OSRAM Opto Semiconductors, Philips, Philips Lumileds, POSCO LED, Samsung, Seoul Semiconductor, Sora, and U.S. EPA.

About the Lighting Research Center

Rensselaer's Lighting Research Center is the world's leading university-based research and educational institution devoted to lighting. Based in Troy, New York, the LRC's staff of lighting experts is working to advance the effective use of lighting to create a legacy of positive change for society and the environment. Since 1988, the LRC has collaborated with industry, government, academia, and public advocacy groups to positively impact lighting manufacturing, design, specification, installation, and use through research, demonstration, education, and market transformation.

For More Information

<http://www.lrc.rpi.edu/assist>

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