Solid-state lighting needs metrics to ensure its success in the general illumination market. The ability for solid-state lighting to save energy and reduce maintenance costs has made it a promising lighting technology for the future. The light-emitting diode (LED), the primary solid-state lighting technology, has evolved rapidly to become a highly efficient source for exit signs, traffic signals, task lighting, and certain niche applications of general lighting.

Yet in order for solid-state lighting to be a success in the general illumination marketplace, measurement methods and testing protocols for evaluating the performance of LEDs and LED luminaires are essential. Unbiased, independent information about LED technology during its development will significantly benefit its market impact, help end-users save energy, and assist lighting manufacturers and specifiers in developing more effective lighting solutions.

### The Need for LED Performance Metrics

High efficiency, long life, durability, dynamic control, and safety are the key reasons for the growing popularity of LEDs. Given the benefits of this technology, progressive lighting manufacturers, specifiers, and end-users are interested in using LEDs to develop innovative and energy-efficient lighting products and installations. However, because LEDs are still a new technology, careful steps are needed to ensure that the lighting community has the necessary information to make informed decisions about how to select and apply this technology effectively. Early failures in market introduction can negatively affect the entire LED industry. It is never too early to start developing measurement and testing procedures and application guidelines for LED components and systems.

Presently, there is a void of unbiased, independent information about LED performance characteristics and testing procedures. Metrics used for traditional sources and luminaires are not relevant because of radical differences between LEDs and traditional lighting. As such, manufacturers are left to decide how to test their products and report performance, leaving end-users baffled as to how to meaningfully compare similar products.

To meet these needs, the **Alliance for Solid-State Illumination Systems and Technologies (ASSIST)** has built itself as an international resource for recommendations and guidelines on LED lighting performance, metrics, and testing procedures.
ASSIST recommends . . . Guidelines for Performance Testing of LED Illumination

ASSIST publishes recommendations on testing the performance of LEDs for illumination and LED-based luminaires. The recommendations are developed through research conducted on behalf of ASSIST by the Lighting Research Center at Rensselaer Polytechnic Institute. This research is designed to understand the basics of LED life and performance in order to better apply LED technology to real-world lighting demonstrations and applications. Understanding LED performance is key to ensuring the maximum potential and future of LED lighting. Testing is also conducted on LED luminaires to learn what factors affect their performance, such as heat, housing design, and installation.

Projects

ASSIST has published recommendations regarding metrics and testing for LED life, under-cabinet lighting, and directional lighting. ASSIST and the LRC are in the process of developing new metrics for LED modules, airport and airfield lighting, and supermarket refrigerated display case lighting.

About ASSIST

ASSIST was established in 2002 to advance the effective use of energy-efficient solid-state lighting and speed its market acceptance. As a collaboration between researchers, manufacturers, and government, ASSIST works to identify and reduce the major technical hurdles facing solid-state lighting. On behalf of ASSIST, the LRC conducts research, demonstration, and educational activities. Beyond technical research, ASSIST fosters discussions between traditional luminaire manufacturers and LED manufacturers. Sponsors include Cree, Federal Aviation Administration, Lite-On, Lumination, New York State Energy Research and Development Authority, OSRAM SYLVANIA, Philips Lighting, Photonics Cluster (UK)/The Lighting Association, Seoul Semiconductor, and U.S. Environmental Protection Agency.

About the Lighting Research Center

The Lighting Research Center at Rensselaer Polytechnic Institute is the world’s leading university-based research and educational institutional devoted to lighting. Based in Troy, New York, the LRC’s staff of 30 researchers, designers, and educators 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 make a positive impact on lighting manufacturing, design, specification, installation, and use through research, application, education, and market transformation.

For More Information

http://www.lrc.rpi.edu/programs/solidstate/assist
N. Narendran, Ph.D., LRC Director of Research
(518) 687-7100 or narenn2@rpi.edu