standards for LEDs.

by Randal Smith

LEDs Magazine Available Online

The state of the art in light emitting diode technology changes faster than the speed of print. What was true at the beginning of a month may have completely changed in the space of a couple of weeks. It can be hard to keep up. Luckily, there is an online resource available for no more than the cost of registration.

LEDs Magazine is located on the Web at www.ledsmagazine.com. Physically located in the United Kingdom, it keeps abreast of developments in LED development in Europe, North America and Asia.

The magazine is published about once a month in PDF format. The registration is short , simple and quick, and it gets you a "key code" that allows you to download the PDF issues. When new issues come out, you receive an email notice. Go to the website and you download the latest issue.

Topics covered in a recent issue included high power LEDs, OLED (organic led) developments, an initiative to bring LED systems to poor villages in India, and developments with residential luminaires.

If you are an LED junkie, do yourself a favor and sign up for Leds Magazine.

When it comes to understanding Solid State Lighting (SSL) could you use a bit of an ASSIST? Then you might want to check out the latest program from the Lighting Research Center called Alliance for Solid-State Illuminations Systems and Technologies (ASSIST) for rock-solid advice on Solid State Lighting. Oh, in case you were wondering, "solid state lighting" is the latest moniker for lighting using light emitting diodes (LED) or organic light emitting diodes (OLED).

The LRC/ASSIST program has a free guide to standards for LEDs and tools for evaluation of SSL products. You can find this guide on the web at http://www.lrc.rpi.edu/programs/solidstate/assist/pdf/ASSIST-LEDLifeforGeneralLighting.pdf. Here are some highlights from the guide:

LED Life Definition

LEDs have very long operational life characteristics, 50,000 hours or longer. Like all light sources, the output of LEDs slowly decrease over time. The reported life of an LED component should be defined as the operating time for the component or system to reach the time to reach 70% lumen maintenance, and then to reach 50% lumen maintenance. This will enable the specifier to determine at what point the system should be relamped or replaced.

A common claim by some manufacturers is that LED systems can be counted on to have a rated life of 100,000 hours or more. These claims clearly do not take lumen depreciation into account.

LED Life Measurement

For the purpose of measurement of useful life, the LED component should first be operated continuously for 1,000 hours at the proper rated current and voltage. Then the component should be monitored for an additional 5,000 hours while monitoring temperatures on the component. The 70% and 50% lumen deprecation levels may be reached within this time frame. If not, the data may be extrapolated to estimate when these point may be reached. The chromaticity (color) may shift in this time period, and should be noted.

The performance of both the LEDs and the driver should be monitored and the temperatures, as well. Heat is the great enemy of lighting system performance, and LED systems are no exception. A popular misconception is that LED systems do not produce any heat. This is not true, especially with the newer, high-output LED systems.

The ambient temperature for LED systems can be crucial to system life and performance. The constancy of voltage supplied by the driver is critical, as well. Too much heat, and inconsistent voltage can prematurely end the life of an LED system. The heat sinks required by some high-output LED systems can be impressively large.

The LRC/ASSIST publication provides sample data collection sheets for three situations: general LED system data collection; low-power LED system data collection; and high-power LED system data collection.

LRC and SSL

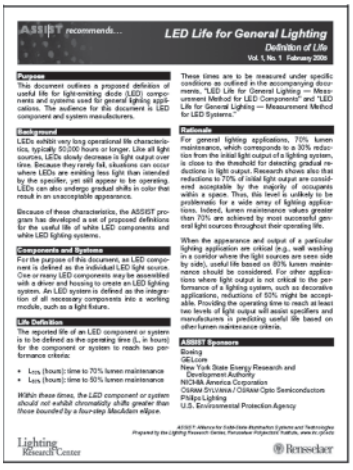
The Lighting Research Center is at the forefront of research and application development. The LRC regularly conducts the LED Lighting Institute, providing 3-day, hands-on workshops for lighting specifiers, fixture designers and manufacturers on the rapidly evolving LED lighting technology.

Additionally, the LRC researches LED lighting applications. Among others, they have evaluated LEDs in retail display windows, low-profile LEDs in elevators, innovative LED lighting in senior care facilities, LEDs in refrigerator cases, outdoor lighting signage, using color in display lighting, and using LEDs for aircraft passenger reading lights.

They are currently conducting technology research into improving white LED performance through scattered photo extraction, and using nanocrystal quantum dots. Application research is ongoing with developing electronic walls and ceiling for use with SSL.

The LRC SSL is available online at http://www.lrc.rpi.edu/programs/solidstate/

The Lighting Research Center is a partner with the Northwest Energy Efficiency Alliance, currently one of the prime sponsors of the Lighting Design Lab. Other partners of the LRC include lighting manufacturers, the New York State Energy Research and Development Authority (NYSERDA), the United States Department of Energy, the United States Environmental Protection Agency, and Boeing.



Right: the LRC provides free information for downloading on standards and testing of LEDs as part of the ASSIST program.