

## Mission Statement

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.

## HISTORY

In the early days of SSL technology, the lighting and semiconductor industries lacked knowledge of each other's respective terminology, definitions, and performance requirements. To address this concern, ASSIST was established in 2002 by the Lighting Research Center (LRC) as a collaboration among researchers, manufacturers, and government bodies to find solutions to the technical and market challenges facing SSL.



More than 17 years of industry partnership to advance research, education and demonstration for the broad adoption of SSL

## ASSIST's Impact: Past and Future

In just two decades, solid-state lighting has gone from small indicator lamps to high-power, high flux general illumination. In that time, ASSIST contributed research, knowledge, and education that has helped shape the technology and transform the global lighting market. Moving forward, ASSIST is evolving to address new challenges faced by the industry with maturing LED technology and looking for greater value beyond energy savings.

### Projects with Impact

**LED Life** – Early claims purported LED lighting to last 100,000 hours. LRC researchers, however, showed that LED life could be far less, depending on the luminaire design and installation. Through ASSIST, the LRC developed a recommended test method for estimating LED life for general lighting. ASSIST's first industry recommendation, released in 2005, defined the "useful" life of LED lighting at L70 and provided a method for estimating useful life, which eventually became the basis for the IES LM-80 standard. ASSIST later went on to produce many "ASSIST recommends" publications and help inform the standards-setting process.

**Freezer and Refrigerated Case Lighting** – In 2002, the LRC began investigating LEDs for supermarket display cases, where fluorescent lamps were common but not ideal for cold environments. A lab study led to an in-store demonstration and an ASSIST-recommended test method. The LRC's initial ground work in the freezer case lighting market resulted in an 85% market transformation to LEDs by 2015.



**LED Lighting Institute** – In 2001, the LRC offered the first research-based, independent seminar for lighting designers, architects, and engineers on how to build successful LED lighting products and applications. Since then, with help from ASSIST, more than 1,000 professionals from 180+ companies in more than 25 countries have learned about LED lighting through hands-on workshop activities at the LRC laboratory in Troy, New York.

## About the Lighting Research Center

The Lighting Research Center (LRC) at Rensselaer Polytechnic Institute is the world's leading center for lighting research and education.

Established in 1988 by the New York State Energy Research and Development Authority (NYSERDA), the LRC conducts research in solid-state lighting, light and health, transportation lighting and safety, energy efficiency, and plant pathology. LRC lighting scientists with multidisciplinary expertise in research, technology, design, and human factors, collaborate with a global network of leading manufacturers and government agencies, developing innovative lighting solutions for projects that range from the Boeing 787 Dreamliner to U.S. Navy submarines to hospital neonatal intensive-care units.

In 1990, the LRC became the first university research center to offer graduate degrees in lighting and today, offers a M.S. in lighting and a Ph.D. to educate future leaders in lighting. With 35 full-time faculty and staff, 15 graduate students, and a 30,000 sq. ft. laboratory space, the LRC is the largest university-based lighting research and education organization in the world.

*Boeing 787 Aircraft* – The LRC partnered with Boeing to develop innovative and efficient lighting solutions for use aboard the 787 Dreamliner jet, a next-generation commercial airplane with energy-efficiency and passenger experience in mind. At the time, LRC researchers had to look to the future of what could be possible for LEDs because the technology was not ready for primetime yet. The LRC conducted laboratory and mockup experiments, created lighting designs and thermal management solutions, and explored brightness, spectrum and timing sequences to help passengers with jet lag from transcontinental travel.



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## Evolving to Meet the Future

With LED technology quickly maturing, ASSIST is evolving to address new challenges faced by the industry and looking for greater value beyond energy savings. One example is smart LED systems with sensors and controls that change the lighting based on information received by the sensor and the needs of the application. Such lighting systems are being deployed to make cities "smarter," buildings safer and healthier, and to offer dynamic lighting levels and color to meet the needs of occupants and the decor.

Applications are also expanding beyond illumination to:

- improve visibility
- provide circadian entrainment for better health
- encourage indoor agriculture
- disinfect and minimize the spread of disease
- support remote control via connected systems

- support and solve communication and data transfer challenges
- use LiFi and PoE systems to transfer data, improve data security, and power lighting using data transfer cables

Beyond applications, in the future LED lighting systems can exploit the rapidly evolving digital manufacturing industries that use 3D printing platforms, which are predicted to revolutionize global manufacturing. Employing 3D printing for lighting would enable quick customization and meet the needs of the building design and construction industries without inflating costs, thus reversing the current trend of mass production that is leading to poor quality lighting products. The use of 3D printing would allow custom lighting systems to be manufactured on-site, on demand, with unique features in a timely manner, and allow for rapid design changes.

For more information about ASSIST:

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

**Lighting**  
Research Center