



LED WATCH

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NGL TELLS US THE STATE OF SOLID-STATE

The annual Next Generation Luminaires competition brings the industry into focus

Two months ago at LIGHTFAIR International in New York, 28 commercial LED indoor and outdoor lighting products were recognized for excellence by the seventh annual Next Generation Luminaires (NGL) Solid-State Lighting Design Competition. Sponsored by IES, the U.S. Department of Energy (DOE) and the IALD, NGL was launched in 2008 to encourage technical innovation and promote excellence in the design of energy-efficient LED luminaires for commercial, industrial and institutional applications. A recap of the top winners and other competition details appears on p. 12, and full coverage is posted online at www.nglhc.org.

Recognition by the NGL judges, who are drawn from across the architectural lighting community, means they consider the product to be specifiable—which is high praise, indeed, considering how difficult they are to please. But, in addition to identifying specifiable, state-of-the-art LED lighting products, NGL can also tell us a thing or two about the “state of solid-state”—that is, the SSL market.

EVOLVING WITH THE MARKET

Over the years, NGL has evolved to meet the market’s changing needs. In 2015, the Indoor NGL focused on controllability and serviceability, and the Outdoor NGL focused on serviceability and pedestrian scale—with submissions limited to selected product types to permit additional attention to those key attributes, which have been generating strong market interest.

NGL judging involves an intense three-step process that combines personal evaluation with objective measures of luminaire performance. Products are installed in their typical applications. Observing lighted performance, taking “field” measurements and inspecting the luminaires directly, the judges first

evaluate entries on eight key criteria: color, illuminance, glare control, light distribution, dimming control, serviceability, value and appearance. But in order to reach the judging process, submissions must include market-ready samples and complete documentation—including luminaire and component specification sheets, LM-79 test reports, lumen maintenance projections, warranty statements and marketing materials.

For the indoor competition, manufacturers were required to submit luminaires with digital dimming drivers (DALI, DMX or a proprietary digital protocol; neither analog nor phase-control devices were permitted) for dimming evaluations. For the outdoor competition, a wireless control system was used to evaluate collector roadway luminaires for dimming.

To evaluate serviceability, manufacturers submitted a tabletop sample, which was closely examined for such things as ease of access, ease of component replacement and clarity of labeling. Some of the winning products were also designated by the judges as Outstanding according to one or more key criteria, regardless of the product category.



Intense Lighting's Gravity Cylinder luminaire rated Outstanding.

WHAT WE LEARNED

As might be expected with a technology that’s developing as rapidly as

solid-state lighting, the 2015 NGL winners showed marked improvements in a number of areas. For example, the winners beat NGL's threshold efficacy by 10 to 40 percent—which is no mean feat, given that those threshold levels are raised each year to keep pace with SSL's continuing advances. Based on lumen maintenance calculations—which are supported by LM-80 data, in-situ temperature measurement tests and TM-21 calculations—most of the winning luminaires far exceed L70 (70 percent of initial light output) at 50,000 hours. More than 80 percent of the indoor winners had a calculated lumen maintenance greater than L80 at 50,000 hours, and more than half of all outdoor entries calculated L95 or greater at 50,000 hours.

For both indoor and outdoor products, serviceability showed some improvement over past years, with fewer entries that had extremely poor access and replacement. The entries that were most successful in this regard offered simplicity, clarity, plug-together components and fewer fasteners. However, labeling for serviceability remains limited. Overall, color quality was judged as “good,” with a few winning products earning “very good” in that area—but some of the outdoor luminaires did exhibit noticeable color separation over the extent of the lighted field. The fact that NGL has seen relatively little overall improvement in color quality over the past few years may be an indication that SSL color quality has plateaued at a level which, while not impressive, is nevertheless satisfactory for many applications.

With regard to dimming control, the most commonly used brands among

DALI models were eldoLED and Advance, and Lutron was the predominant proprietary brand. Overall, the digital controls performed well according to the specific criteria, with none of the winning products scoring less than “good” on controllability—although half of the other products scored less than “good.”

Among winning products, the various luminaire-driver-control configurations



Selux Olivio pedestrian-scale luminaire rated Outstanding.

produced results that were quite different, with no one arrangement having a clear advantage. Dimming curves varied considerably in terms of both the gradient and the range. Some luminaire-driver-control configurations could dim smoothly to light levels below 5 percent, while other products exhibited a steep drop in the low range—a problem that may be resolved by selecting specific driver/control combinations, or by specifying or programming the curves.

A few luminaires flickered when dimmed, especially at low light levels, but this problem wasn't associated with a specific driver and thus should be evaluated on a case-by-case basis. The one area in which products in nearly all categories lagged was glare, although winning products did better than the other entries in this regard.

EMPHASIS ON TUNING

Color tuning—the ability to create different tonalities of white light for different applications and scenes—also received special emphasis from NGL this year. Most entries in this category offered separate adjustment of color temperature. One offered “dim to warm,” where color temperature was coordinated with dimming level to emulate a dimmed incandescent lamp; one offered red-green-blue-white, where hue could be adjusted, as well as color temperature; and one offered wirelessly controlled preset levels (to provide flexibility of color selection and logistical simplicity, rather than scene-based tuning). The color-tuning products as a category performed well, with some providing intuitive and easy-to-use controls, and four considered Outstanding.

NGL encourages manufacturers to keep innovating and makes it easier to specify SSL products, while providing an annual snapshot of how the technology is progressing. For more information on the competition, visit www.ngldc.org.

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