

## ARCHITECTURAL LIGHTING

# DOE awards Koerner Design for sustainable LED luminaires design competition

A holistic approach to complete systems design results in an LED-based luminaire with excellent efficacy and one where manufacturing and recycling minimally impact the environment.

Jan. 28, 2020



The Bamboo Pendant designed by Brad Koerner of Koerner Designs has won the US Department of Energy's Manufacturing Innovator Challenge for Sustainable Manufacturing of Luminaires. (Image credit: Illustration courtesy of Lucept.com, Koerner Design.)

The US Department of Energy (DOE) has announced the winner of its Manufacturing Innovator Challenge for Sustainable Manufacturing of Luminaires. Brad Koerner of Koerner Design won the award in the program hosted by the DOE Office of Energy Efficiency and Renewable Energy (EERE). Koerner's winning design is a bamboo pendant that relies on recycled materials, a minimal bill of materials, and delivers excellent energy efficiency.

[The DOE launched the challenge back in October](#), saying that most solid-state lighting (SSL) products rely on materials such as aluminum and other dense materials. The announcement noted that LED sources should be amenable to lighter-weight designs and materials that could be easily recycled at the end of life. Meanwhile, the program sought concepts that delivered excellent efficiency and light quality at the system level.

Koerner has long championed the circular economy and new approaches to luminaire design. In the entry to the DOE contest, he said, "Pushing the lighting industry to completely rethink our ambitions for sustainable and circular economy products and solutions has been a personal focus of mine for many years. The LED revolution turned entire lighting fixtures into disposable, e-waste junk. We took a model that worked great for decades — replaceable and repairable sockets and lamps — and completely threw it away in the name of LED thermal efficacy and cost reduction."

Way back in 2013, [Koerner made a presentation at Strategies in Light](#) arguing for a [change in luminaire design](#) where final assembly and customization of LED luminaires would take place on building sites and where modular light engines would be utilized.

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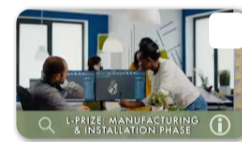
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And he also wrote a column for us after challenging the DOE to encourage new sustainable approaches, perhaps in part leading to a contest that he ultimately won.

Koerner's concept for the DOE contest is fully revealed on his website. His intention was a design that would enable net-zero buildings. He proposed a centralized power conversion and a DC grid to maximize electrical efficiency — a topic we have covered a number of times.

The design is based around LEDs mounted on a flax-based printed-circuit board (PCB) rather than the fiberglass and epoxy resins used widely by the electronics and lighting industries. Koerner's contest entry stated that, at end of light, the PCB could compost back into the flax fields that supplied the raw materials to make the PCBs.

Koerner chose bamboo to build the structural elements of the luminaire. He said bamboo is a rapidly renewing resource that does not require a lot of energy or processing before being integrated into a luminaire. And the result has quite a compelling look and feel.

Even the methodology for assembling Koerner's bamboo luminaire was developed to promote sustainability. The pieces fit together almost like a 3-D puzzle, avoiding adhesives and screws. And even the low-voltage cables enabled by DC power were specified to be free of any toxic substances.

In the end, the DOE felt that the best luminaire designs would both reduce the number of parts used and the manufacturing cost of a luminaire. Koerner's Bamboo Pendant offers the potential of meeting that goal, delivering state-of-the-art energy efficiency, and providing excellent light quality.

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## LEDs MAGAZINE BRAND ANNOUNCEMENT

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### Brand Closing Announcement from LEDs Magazine

LEDs Magazine will close out its website and editorial newsletters in December, with some content archiving on the BUILDINGS.com website.

Dec. 6, 2024



## PEOPLE ON THE MOVE

### LIGHT BITES

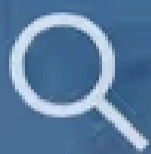
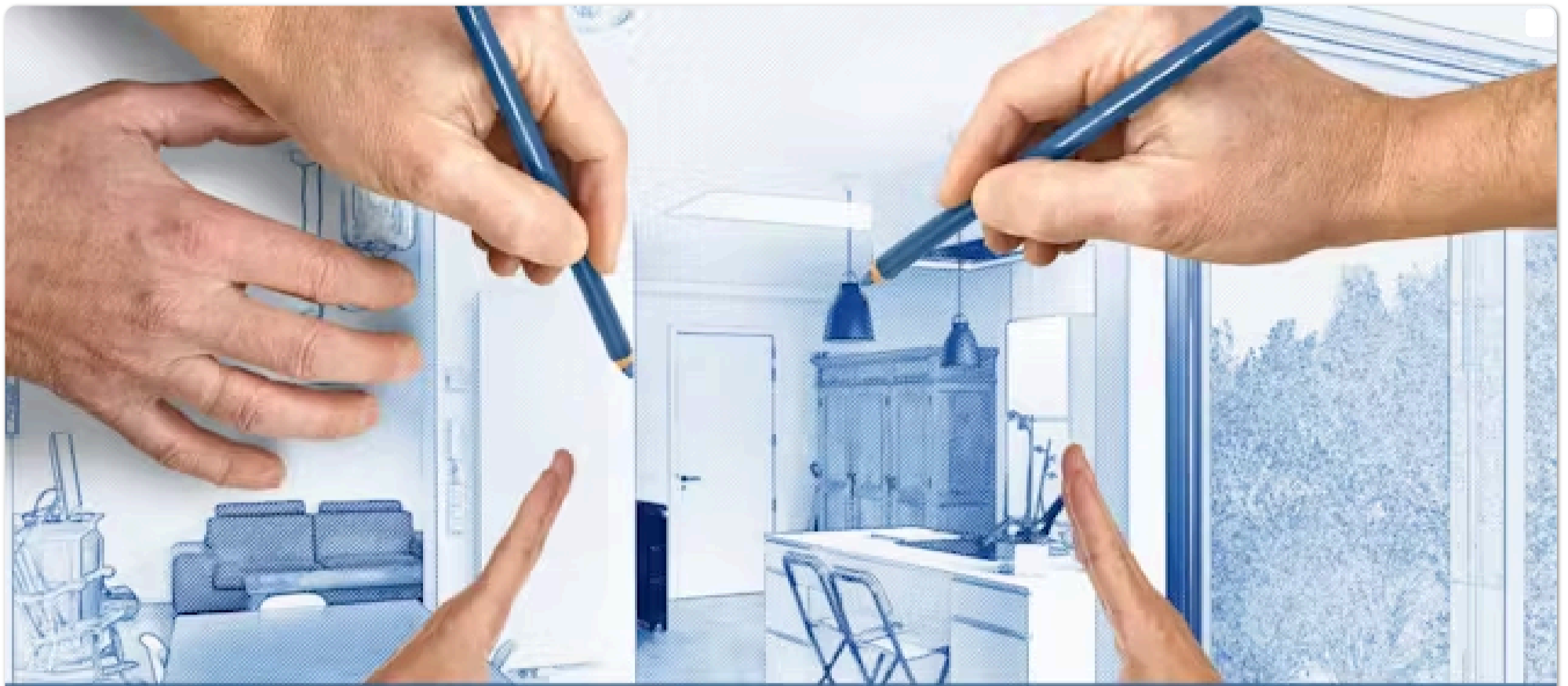
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### LIGHT BITES | Lighting, controls, and design firms announce new personnel

New hires demonstrate the breadth of exciting opportunities in the North American lighting and controls market.

[Carrie Meadows](#)

Sept. 17, 2024



## DESIGN BASICS: SOFTWARE TOOLS



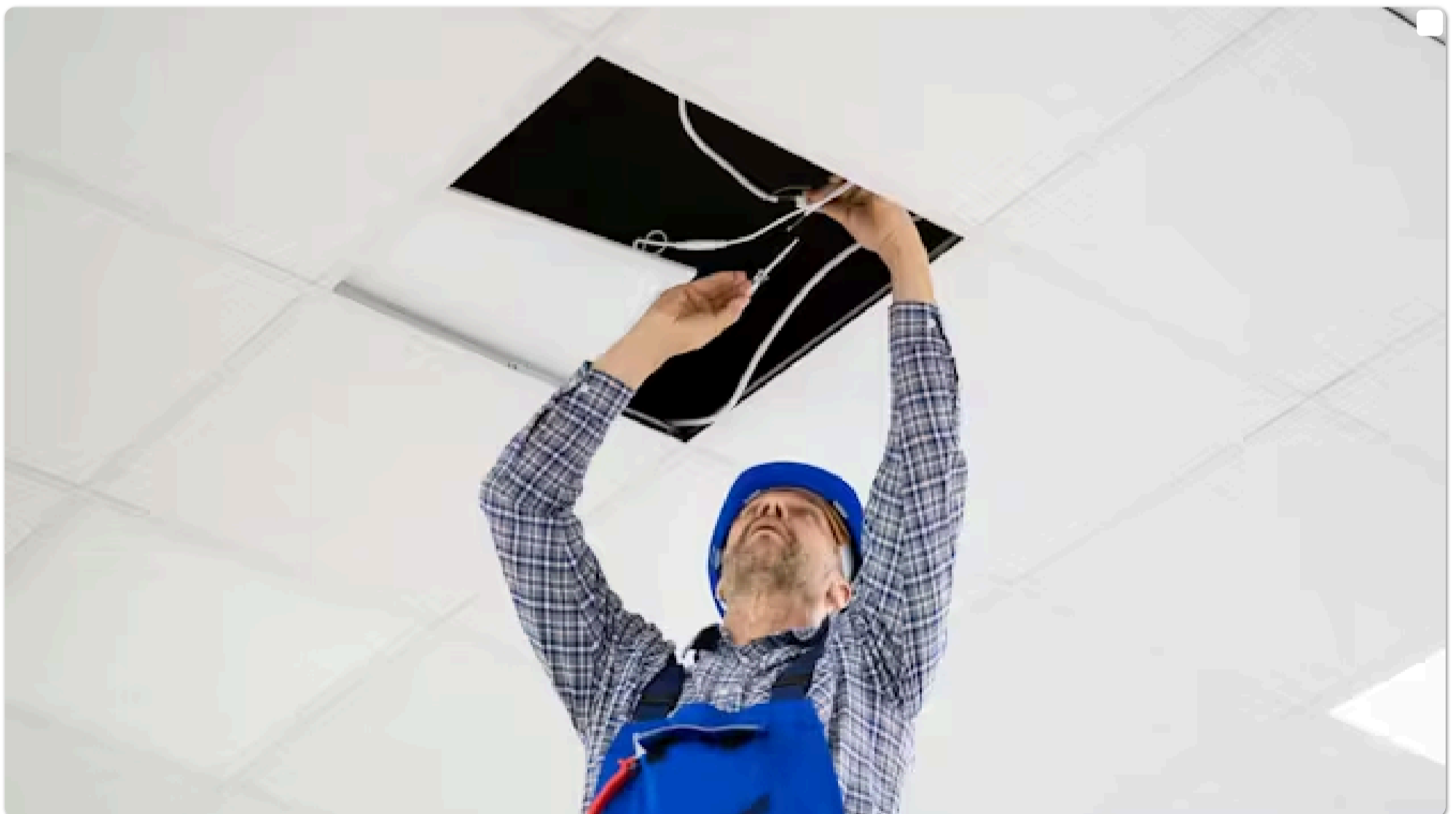
Manufacturing Services & Testing

### DESIGN TOOLS | Simulation software optimizes indoor lighting efficiency

POOK VILLEGAS introduces the basics of lighting simulation software for designers who are just starting out.

[Pook Villegas](#)

Sept. 16, 2024



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### RETAIL APPLICATIONS | LED retrofits deliver ROI for large retailers

When properly planned, large retail projects can benefit from the improved illumination, energy savings, low maintenance, reduced downtime, and lower costs of LED lighting retrofits...

[Sean R. Nacey](#)

Sept. 11, 2024



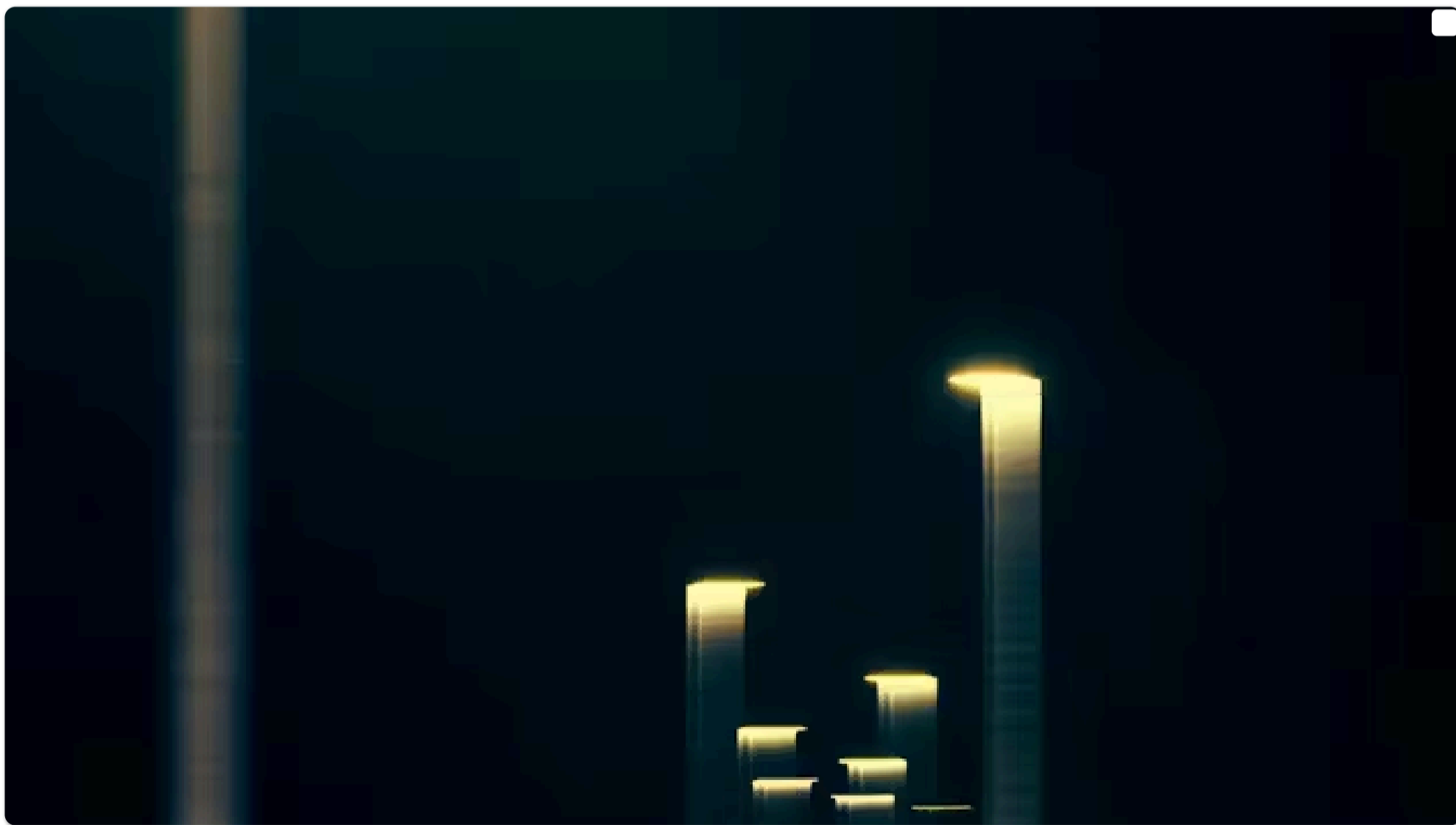
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## Coronet LED’s Architectural Luminaires Define Bialek’s Borderless HQ

In modern workplace design, change is the only constant. With rapid technological advancements continuously reshaping how we work, designers face the challenge of creating offices...

Sept. 1, 2024



Lighting for Health & Wellbeing

## DARK SKIES | LUNA program seeks to advance acceptance of targeted outdoor lighting usage

DLC’s LUNA guidance gets a nod from the GSA, as the consortium shares study findings that elaborate on energy/cost benefits of qualified outdoor lighting.

[Carrie Meadows](#)

Aug. 16, 2024



Lighting for Health & Wellbeing

## INDUSTRY INSIGHTS | Bringing circadian rhythm lighting and quantum dots together to advance wellbeing

Technology startup founder SARAH MORGAN opens a series about circadian lighting opportunities with a call for readers to vote on covered project findings.

[Sarah Morgan](#)

Aug. 7, 2024



LEDs & SSL Design

## LIGHT BITES | New LED launches from Lumileds, Luminus, and Violumas

LED developers continue to push performance in compact emitters, digging in to refine thermal management and optical designs for a range of use cases.

[Carrie Meadows](#)

Aug. 5, 2024



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## INDUSTRY INSIGHTS | Develop serviceable luminaires with support from Zhaga standards

ZHAGA CONSORTIUM members summarize how replaceable components prolong the useful life of luminaires and contribute to a circular economy.

Jan de Graaf

July 25, 2024



Lighting for Health & Wellbeing

## DarkSky teams with global cities association to fight light pollution

Any sustainability initiative must include protection of night skies, says the nonprofit, as it joins forces with LUCI.

Mark Halper

July 23, 2024

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## STANDARDS | Market transformation and standards groups ally to evolve guidance for energy-efficient lighting products



DLC program director LIESEL WHITNEY-SCHULTE condenses the core industry initiatives in which the DLC participates to inform standards development and product assessment criteria...

Liesel Whitney-Schulte

July 17, 2024

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### PROJECT | Workhorse pendants balance ambience and task illumination in hospitality venue



High-bay lighting from Luminis contributes to a unique restaurant aesthetic in Earl Giles Distillery production space.

[Luminis](#)

July 16, 2024

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### Latest outdoor luminaires from Glamox tick multiple eco boxes



Recycled aluminum, reusability, and night sky protection all factor into a rugged new wall-mounted line.

[Mark Halper](#)

July 3, 2024

Manufacturing Services & Testing

### Fagerhult teams with metals company for aluminum recycling



Not all recycling is created equal. A pilot project involving a sprawling Oslo office park yields promising results.

[Mark Halper](#)

June 28, 2024

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