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with ghoulish delight

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LD+A

DECEMBER 2024 • VOLUME 54 • NO. 12

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Photo: BRC Imagination Arts

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On The Cover

Illumination reveals and conceals the secrets—such as the Hatbox Ghost—within Disney's haunted attractions across the globe. Photo: ©Disney



EDITOR'S NOTE

Ghoul to Be Kind

Growing up, I was regaled of tales detailing how my friends epically conquered the great Mountains of Walt Disney World—Big Thunder, Splash and Space. My family only visited the Orlando, FL, park once, in 1976, when I was four years old, well before these three attractions had risen from the earth (or the hands of Imagineers). My memories of that experience are limited to the monorail and enough voyages around “it’s a small world” to make my parents loopy. Despite my lifelong love of theme parks, I was unable to return and remained ignorant of the “Disney bubble” for the next 37 years.

Then kids happened. It started out as an attempt to allow them to experience something I had not (and, in some cases, not remembered), and so my wife and I packed up our then 6- and 11-year-old girls and headed to the “most magical place on Earth.” What occurred was unexpected: I was able to see the four parks through their eyes, and it lived up to the magical hype. But two things moved me the most, with the first being the superior level of customer service provided by Disney’s Cast Members. Second, while the more modern, IP-related attractions were otherworldly—I’m looking at you Rise of the Resistance and Avatar Flight of Passage—it was The

Haunted Mansion that remained most closely with me. The Doom Buggy ride vehicles, off-kilter cordiality of the Paul Frees-voiced Ghost Host and illumination that reveals spooky secrets all contribute to The Haunted Mansion remaining a beloved attraction well into modern times.



Four Walt Disney Imagineers spoke with *LD+A* about how illumination brings both the undead and mysticism to life—from Anaheim to Orlando and Paris to Hong Kong

Four Walt Disney Imagineers spoke with *LD+A* about how illumination brings both the undead and mysticism to life—from Anaheim to Orlando and Paris to Hong Kong—while at the same time seamlessly blending the uneasiness of haunted attractions with the whimsy of Disney. While most haunts are designed to terrify guests with the fury of hellfire, The Haunted Mansion’s Ghostess (also dubbed “Little Leota”) beckons visitors to return with a hauntingly hospitable “Hurry back! Hurry back!”

In a world that is seemingly skewing more toward Art the Clown by the day, it’s encouraging to see that there is still an aura around Disney’s “Happy Haunts.” As Walt Disney used to say, “We’ll take care of the outside. The ghosts can take care of the inside.”

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Published by
Sage Publications, Inc.
2455 Teller Road
Thousand Oaks, CA 91320
Phone: 800-818-7243
Website:
www.journals.sagepub.com

LD+A is a magazine for professionals involved in the art, science, study, manufacture, teaching, and implementation of lighting. LD+A is designed to enhance and improve the practice of lighting. Every issue of LD+A includes feature articles on design projects, technical articles on the science of illumination, new product developments, industry trends, news of the Illuminating Engineering Society, and vital information about the illuminating profession. Statements and opinions expressed in articles and editorials in LD+A are the expressions of contributors and do not necessarily represent the policies or opinions of the Illuminating Engineering Society. Advertisements appearing in this publication are the sole responsibility of the advertiser.

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POSTMASTER: Send address changes to LD+A, c/o Sage Publications, 2455 Teller Road, Thousand Oaks, CA 91320. Subscribers: For continuous service please notify LD+A of address changes at least six weeks in advance. Canada Post: Publications Mail Agreement #40612608. Canada Returns to be sent to Bleuchip International, P.O. Box 25542, London, ON N6C 6B2.

This publication is indexed regularly by Engineering Index, Inc. and Applied Science & Technology Index. LD+A is available on microfilm from Proquest Information and Learning, 800-521-0600, Ann Arbor, MI



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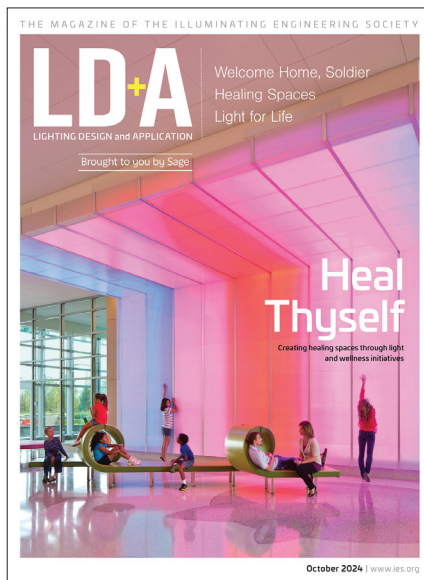
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READERS WRITE



Not My Type

Excellent article [“Type B TLEDs,” *LD+A*, October 2024]! It’s unfortunate, six years after others found—and revealed—the issue, that flickering Type B TLEDs are still available.

In 2018, for a New York State Research and Development Authority-sponsored lighting project in the town hall of Croton-on-Hudson, NY, I had the opportunity to compare a dozen types of LED conversions, including Types A, B and C TLEDs from several manufacturers and a pair of LED retrofit kits. We produced a booklet on the project that features a table of LED characteristics that includes data on flicker percent and frequency of the tested options.

One of the surprising findings of the project was the intense flicker from

Type B TLEDs. Another was that one of the LED retrofit kits also flickered due to the low quality of its driver. Upon notifying the latter’s manufacturer, he immediately switched to a better driver that caused very little flicker.

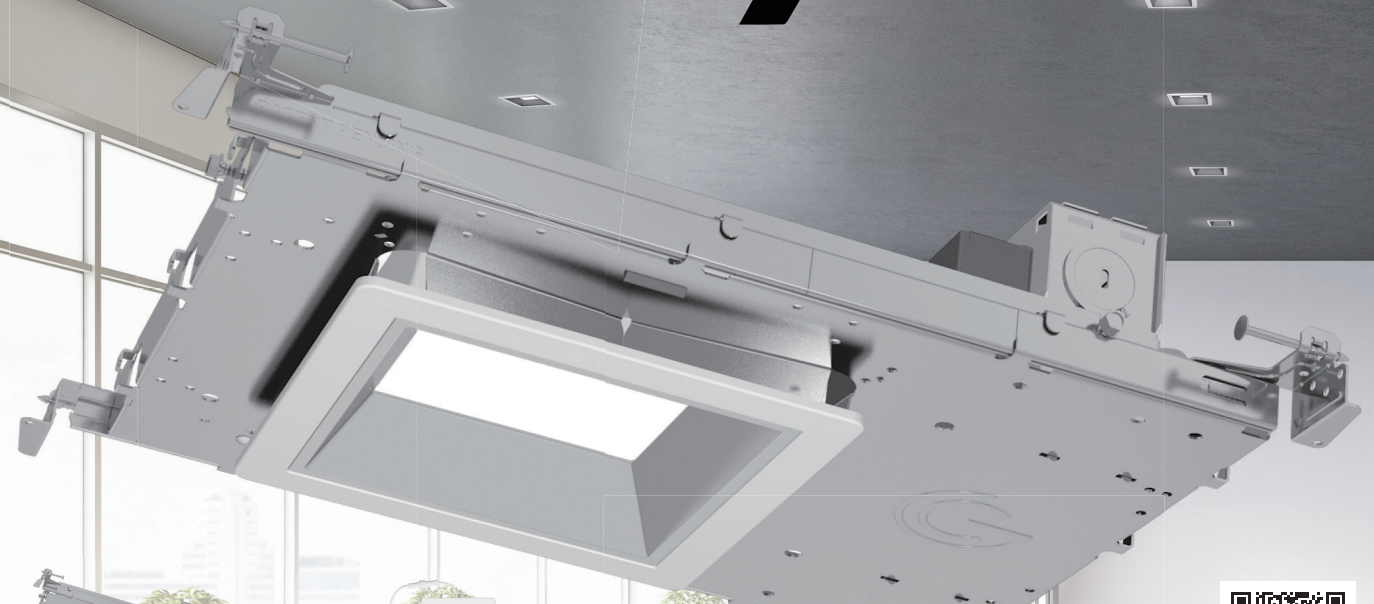
To quantify the flicker percent and frequency range, we used a Fauser LiFli light flicker meter and miniature oscilloscope. But the flicker was obvious even when using either a primitive flicker wheel or a handheld “ballast discriminator” used to find magnetically ballasted fluorescent lamps in the 1990s.

Among the PNNL authors of the *LD+A* article, I was surprised to not see Naomi Miller of PNNL, the acknowledged “Queen of Flicker” for her work and presentations on the issue. Her July 11, 2019, webinar on LED flicker was the best I’ve ever seen.

The issue of Type B TLEDs in schools is significant. The New York State Department of Education still provides funding of LED lighting conversions solely for Type B TLEDs, despite flicker issues.

*Lindsay Audin, CEM, LEED AP
Chair, Croton Sustainability
Committee
Croton-on-Hudson, NY*

*LD+A Reserves the right to edit
letters for length and/or clarity.*

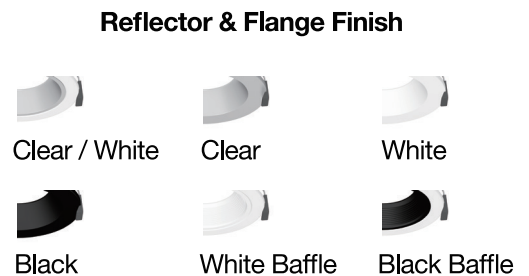
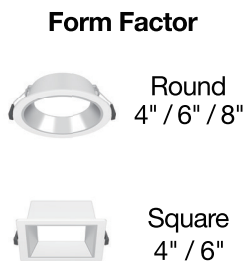
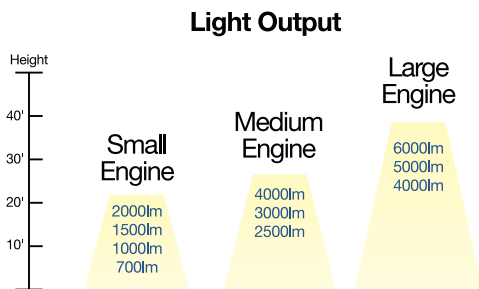


Downlighting Reborn

Provide the required selectability and adaptability for a range of applications, from new construction to renovations



Optional



CONTRIBUTORS



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is industry relations consultant for the IES. **p.16**

Jerry Plank

is the CEO/founder of Wilger Testing, an accredited third-party laboratory testing for product safety and performance. **p.20**



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INSIGHTS

Dark Sky Practices • Eye Health • Experience Center



Photo: Matteo De Bernardini - Wide Space Studios

When Darkness Falls Across the Land

A new workshop takes attendees on a nighttime adventure to promote sustainability

In October, the second Going Dark Workshop, created by UK-based creative consultancy Light Collective and Italian architectural firm Traverso Vighy, took place in a medieval castle town in the heart of Tuscany, Italy. The three-day event invited international attendees to journey through the heritage town of Monteriggioni at night to experiment with various illumination techniques and fixtures; the goal was to learn multiple approaches to dark-sky conscious architectural lighting over the course of the adventure. The unique workshop not only offered hands-on learning, but it also allocated time to discuss findings from the evening tours, the rare opportunity for stargazing in an unpolluted sky and a moonlit excursion to learn about the region's history and surrounding nature.



Illumination Adjacent: Seeing Clearly

In an effort to communicate the importance of visual health, the American Optometric Association (AOA) launched The Eye, an educational prototype, during a multi-day pop-up exhibit in New York City in the summer of 2024. Research by the AOA found that while nearly 80% of Americans think it is essential to have the latest in technology, many Americans do not prioritize their visual health in the same way as they do their gadgets. The prototype sets up a version of the eye that encourages humans to look at their organic devices through the lens of expensive tech. Member of AOA Board of Trustees Belinda R. Starkey, O.D, said, “Maintaining eye health is vital at every stage of life to prevent vision loss and enhance overall well-being. Our Eye Deserve More campaign and The Eye serve as powerful reminders that our eyes are one of the most valuable assets we have. Prioritizing in-person, comprehensive eye exams with a Doctor of Optometry ensures that we can safeguard the sophisticated tech we are born with.” Those interested in learning more about the campaign and the prototype itself can visit <https://seetheeye.com/> to experience a digital version of the tool.

THEY SAID IT:

“It is important to remember that AI isn’t actually ‘smart’”

Andi Walter, “Rise of the Machines” p.46

MERGERS & MORE:

- **The DALI Alliance, TALQ Consortium** and **Zhaga Consortium** have signed a liaison agreement to collaborate on unifying data streams for smart street lighting, which allows for more interoperable choices of outdoor lighting solutions for designers.
- Brooklyn, NY,-based **David Weeks Studio** has partnered with online luxury marketplace **1stDibs**; the store now offers six of the studio’s fixtures including a revamped version of the Aluminum Bullet chandelier.
- LED lighting solutions provider **LITE** has added the **LIEGO** plug-and-play system as well as **Trilolight’s liniLED** interior and exterior solutions to its portfolio.



\$65.77
BILLION

The amount the global OLED market is forecasted to grow from 2023 to 2028.

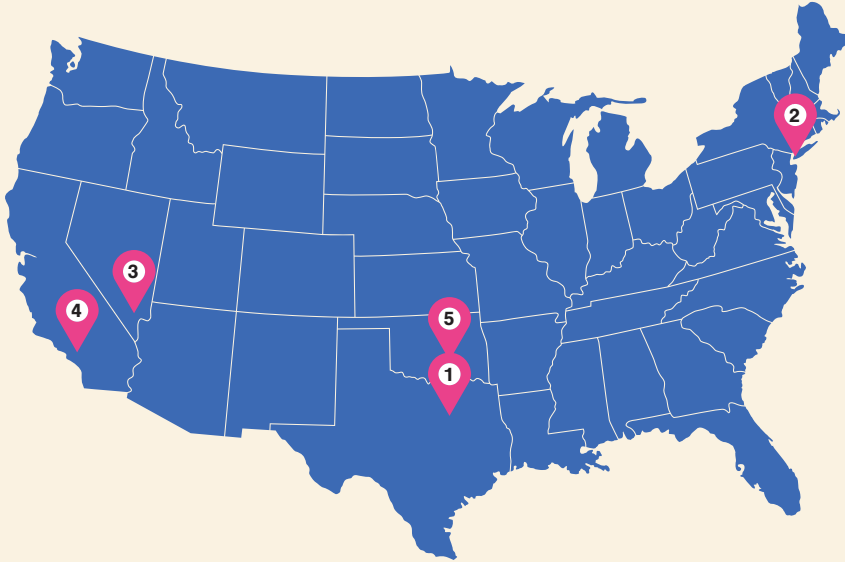
Source: Research and Markets



Photo: Creston Electronics

The Creston Experience Center, an immersive flagship showroom, opened in New York City in the fourth quarter of 2024. Visit <https://www.youtube.com/watch?v=kAOeXWpQ-Xo> to take a digital tour of the space.

EVENTS



1. January 8–11

Lightovation, the largest residential lighting trade event in North America, will take place at the Dallas Market Center and feature over 100 exhibitors displaying indoor and outdoor products, decorative and architectural products, ceiling fans, lighting controls, light sources, as well as smart and connected lighting systems.

www.dallasmarketcenter.com

2. March 18–19

LEDucation will take place at the New York Hilton Midtown with virtual sessions being held March 13–14. A non-profit event organized by DLFNY with proceeds helping to stimulate future LED advancements through support to grants, scholarships and lighting programs, LEDucation is a marketplace for solid-state lighting innovations. Attendees such as lighting designers, architects, interior designers and industry professionals can experience new technologies and participate in accredited seminars.

www.leducation.org

3. May 4–8

LightFair 2025 will be held at the Las Vegas Convention Center. Presented by Light + Building, the event is the premier, biennial architectural and commercial lighting trade show and

conference as well as a preferred marketplace, networking and education destination.

www.lightfair.com

4. August 21–23

IES25: The Lighting Conference, IES' annual conference, will be held at the Anaheim Marriott in California. The event includes one day of hands-on workshops and two days of educational sessions, technical paper presentations and manufacturers' exhibits as well as the Illumination Awards Gala.

www.ies.org

5. September 16–17

ArchLIGHT Summit, a commercial and architectural lighting event, will take place at the Dallas Market Center in Texas. It will showcase new products from leading commercial brands and include a full slate of accredited educational and hands-on experiential sessions facilitated by leading minds in design and lighting.

www.archlightsummit.com

6. September 21–25

The IES Street and Area Lighting Conference will take place in New Orleans and focus on improving outdoor lighting through training classes, seminars and networking sessions as well as an exhibit hall.

www.ies.org

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Illuminating
ENGINEERING SOCIETY

IES ILLUMINATION AWARDS

2025 CALENDAR

JAN 2-24 | EARLY SUBMISSION

Deadline 11:59pm EST (Early bird submission fee: Members \$265 / Non-Members \$365)

JAN 25-FEB 21 | REGULAR SUBMISSION

Deadline 11:59pm EST (Regular submission fee: Members \$320 / Non-Members \$420)

FEB 24-MARCH 10 | SECTION IA CHAIR PROCESSING

- Section IA Chairs will review submissions for compliance of rules and guidelines
- Projects that comply with the rules of the program will move onto Merit Judging

MAR 24-APR 21 | ONLINE MERIT JUDGING

- Eligible projects receiving sufficient scores during online judging receive an Award of Merit
- Projects receiving exceptionally high scores will move to final, society level judging

EARLY MAY | LIVE FINAL ROUND JUDGING

- Eligible projects passing the online phase are judged during live, society level final judging
- Final judging determines the highest level of Society awards including Special Citation, Award of Excellence, or Award of Distinction
- If projects do not score high enough at this level, they retain their Award of Merit

EARLY JUNE | AWARD RECIPIENT NOTIFICATION

Local Section Judging will be conducted at the discretion of Section IA Chair timeline.



ILLUMINATION AWARDS



Photos: Steve Hall

1 Linear “grazers” with integral louvers to minimize glare are integrated behind structural points at the top and bottom of the stair to wash the metal rods in light.

2 Downlight “grazers” illuminate stair treads while uplight “grazers” illuminate the underside of the stair wrap.

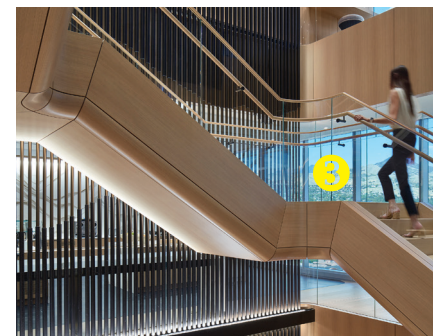
3 To mimic natural light coming through large windows, tunable-white LEDs are programmed to change color temperatures and intensity throughout the day.

HOW THEY DID IT

IES ILLUMINATION AWARD OF MERIT

“Confidential Client Stair”

The lighting strategy by **Schuler Shook** at a four-story interconnecting stair inside a new high-rise office complex with floor-to-ceiling grazing in Salt Lake City, UT, is both beautiful and functional. Taking inspiration from the city’s mountain ranges, metal rods encased in dark-colored tubes span the full height of the space and contrast with the wood-wrapped stair.





PROGRESSIONS

Mark Lien

SWOT Analysis: Where the industry stands at the end of 2024

This list is not static. As our industry evolves, our strengths, weaknesses, opportunities and threats (SWOT) change. The priority of each will be viewed differently depending on how it personally affects lighting professionals and/or their businesses. You may be able to add to this list based on the challenges or positive vision influencing your life.

Many of the market shifts noted in this column provide both a threat and an opportunity: strong enough to help or hurt—double-edged swords and mixed blessings. The question to be resolved is whether they are more advantageous than threatening. Artificial intelligence (AI), for example, will have a brief advantage for those who embrace it early. Conversely, those who are slow to use AI will be less efficient and effective than early adopters.

This list is merely a snapshot of our industry. Sometimes we see in captured images what is less visible to us otherwise. We can focus on a still image, but video, as in the movement of our lives, compels us to keep up and does not encourage our using the pause button. Only by stopping to concentrate can we analyze effectively. There is bias in my snapshot reflecting my preferences in content and experience. With humility and understanding that your take

may differ, I offer my snapshot of our lighting industry.

Strengths

- Light is as fundamental to life as air and water. It is, and will always be, critical to sustaining life.
- Electric light extends our days, freeing us to continue activities beyond daylight hours.
- Electric light can be used to support health and treat medical conditions.
- Electric light can enhance safety and security.
- Electric light provides more illumination for lower costs than ever before.
- Electric light can provide various color temperatures for health, mood and entertainment.
- Electric lighting can be controlled in terms of intensity, color and duration.
- LED lighting is highly efficient and small enough to integrate into other building components and appliances.
- Strong expertise still exists in all lighting skill sets (although researchers are being repurposed, and the most experienced professionals are aging out of our industry).

Weaknesses

- The lighting industry has been progressing incrementally in recent years with no major technological breakthroughs.



Remember, that what does not change is as important as what does

Most of our recent innovations have been from combining more features into products and/or adding converging technologies.

- LEDs are commodity products, having matured to the point where the marketplace accepts current price and performance levels.
- As prices and profits declined, research on lighting technologies slowed or stopped.
- The IES, which developed standards and otherwise established and supported the lighting industry, has seen significantly less support from manufacturers in recent years. The IES uniquely unites the disparate skill sets in our industry, bringing together lighting researchers, designers, educators, manufacturers, utilities, energy service companies and more under one big nonprofit umbrella to share and learn from each other. Together, they write the standards that provide definitive guidance for lighting practice, applications and metrics as well as educational content. Without support, these standards will be written by other organizations not familiar with our industry or not developed at all. Without support, the focused networking with lighting colleagues across multiple skill sets will

- be diminished.
- Electric lighting is taken for granted. We all grew up with it, it is readily available and is ever present without our contribution or understanding of its complexities.
- The lighting industry is converging with other technologies at an unprecedented pace. Most lighting professionals will have to learn new skills rapidly.
- The manufacturer-based educational facilities that were providing critical lighting information as well as product training have focused mostly or entirely on the product training without addressing major market shifts with new curriculum.
- The incentives for Emerging Professionals to consider lighting as a career have decreased.

- Dave DiLaura, in his “History of Lighting” presentation about two decades ago, warned that lighting could become a commodity like paper towels. As LEDs matured, some of our market has stabilized so that lamps and luminaires can be put in the same shopping cart with other commodities. With few significant lighting innovations or changes, consumers are increasingly familiar and comfortable with selecting lighting products.

Opportunities

- AI
 - AI tools for marketing, lighting design, product manufacturing, enhanced customer service, lighting control, project collaboration, video creation, unique image creation and writing text exist now and

are slowly being adopted by lighting professionals.

- Specific AI lighting products are available for horticulture to target and treat plant diseases and others with sensors that can discern objects to minimize nuisance tripping on motion sensing (pets, debris blowing past, etc.).

- Electrification
 - With increasing kilowatt-hour rates due to demand exceeding supply for the foreseeable future, lighting retrofits to maximize energy efficiency in buildings are more marketable with a faster return on investment.
 - A holistic approach to maximizing efficiencies is optimal with a team that evaluates lighting, HVAC and the building envelope for coordinated solutions.
- Renewables
 - Ambitious goals by lighting and other companies to achieve net-zero or low-carbon goals have advanced the wind and solar industries.
 - LED technology is compatible with direct current sources.
- Sustainability
 - There has been renewed momentum and focus on the sustainable aspects of lighting beyond energy efficiency.
 - CEOs are now listing sustainability as a top priority.
 - A trend toward miniaturization contributes to less material, shipping and distribution

Lighting SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> • Light is critical for life • Electric light extends our days • Lighting enhances safety & security • Electric light is increasingly affordable • LEDs vary in intensity, color & duration • LEDs are small enough to integrate • Strong expertise in lighting exists now 	<ul style="list-style-type: none"> • No new lighting tech advancement • LEDs have become commodities • Lighting research declines • Industry associations lack support • Electric light is taken for granted • Converging tech requires new skills • Lighting education options reduced
Threats	Opportunities
<ul style="list-style-type: none"> • Artificial Intelligence • Assimilation • Electrification • Renewables • Sustainability • Quantum Computing 	<ul style="list-style-type: none"> • Artificial Intelligence • Electrification • Renewables • Sustainability • Quantum Computing • Lighting for Health

costs and reduced material in the waste stream.

- Lighting manufacturers are promoting 3-D-manufactured products.

- Quantum computing
 - It will accelerate computing speed and machine learning.
 - One company speaking at the MIT EmTech conference this year was PSIQuantum, with a mission to “build and deploy the world’s first useful quantum computers.” They are building in the Quantum and Microelectronics Park being developed in Chicago.
 - There are three nations, China, Japan and the U.S., selling quantum computers now for about \$15 million. The U.S. is considered the leader in this computing revolution.
- Lighting for health
 - The complexity of refining metrics that can address the significant variables in human metabolism—let alone other life forms—has proven difficult. If we can standardize ways to improve human health through electric lighting, then the demand for new products would surge from consumers who could afford them.

Threats

- AI
 - While new jobs will be created, significant re-skilling will be needed for workers displaced by AI in the lighting industry. Expectations will be increased as AI speeds up processes.
- Assimilation
 - Large electronics and Internet companies have a

financial incentive to centralize the control of electrical devices and appliances. The first to combine controls to simplify using our toys and tools will lead a profitable market shift. These companies are large enough now to assimilate some of the peripheral industries that they will be controlling with their key offerings. Should they be rewarded further for their efforts, it seems even more likely that disintermediation will raise their profits. With profits falling on LED products, the largest producers have manufacturing advantages difficult for small players to compete against. This additionally supports the shift to producers that can be competitive on commodity electric lighting, the bulk of lighting sales.

- Electrification
 - Elon Musk stated that AI will run out of electricity and transformers in 2025.
 - Some large urban areas are at peak supply now and unable to handle the increased loads of AI, EV charges, data centers and cryptocurrency.
 - New power generation for data centers will be primarily funded by technology companies, not utilities. The lighting community is involved with electric utilities but less so with technology companies.
 - Supply cannot ramp up to meet demand short term, so kilowatt-hour rates will rise.
- Renewables/sustainability
 - Eric Schmidt, former Google CEO, said, “We’re not going to hit the climate goals

anyway.” He added that sustainability objectives may take a back seat—“All of that will be swamped by the enormous needs of this new technology,” referring to AI electricity demands. “Because it’s the arrival of an alien intelligence, right—something we don’t understand—we may make mistakes with respect to how it’s used, but I can assure you that were not going to get there through conservation,” he added.

- The tech industry is now moving toward nuclear power and minimizing its progress on wind and solar as its needs have exceeded expectations.
- This trend will slow progress on non-nuclear sources.

- Quantum computing
 - It will accelerate expectations for faster response times.
 - Quantum computing is capable of compromising encryption used for personal and business security measures. The extreme speed allows for faster testing of vulnerabilities.

If the above resonates with you as accurate, then consider how we can take advantage of our strengths and opportunities while being aware of our weaknesses and preparing for impending threats. Remember, that what does not change is as important as what does.

Mark Lien, LC, LEED AP, is industry relations consultant for the IES.



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SAFETY

Jerry Plank

Safety and Murphy's Law Gaining wisdom through mistakes

How fast time flies—we are already at the end of 2024. So much has changed this year as we look back and reflect on what has been, but one thing is constant: a new year brings with it the chance for next year to be better. As each new generation of lighting professionals evolves, many of us who have experienced 40 or more years in this crazy world of lighting hope that our contributions have meant something, and that the next generation of lighting leaders will improve on the work that we have produced. Certainly, we all can learn from our past mistakes, as they come with a dose of wisdom. So, as we close out another year, let's look at some past failures in the hope that we can gain greater insight.

The following is a list of some big whoppers, but it is not a complete catalog by any means. While lighting is paramount to improving the human condition, each new advancement finds Murphy (of Murphy's Law fame) waiting in the wings to pounce.

Our story starts at the turn of the century, circa 1880, where electrical pioneers were in hot pursuit of the electrification of the world, with Thomas Edison leading the charge with direct current. Edison is credited with the first installation of lights onboard a vessel (the *S.S. Columbia*), comprising cloth-

braided copper wires affixed to his first lampholder base, which was wood and metal to energize the carbon filament lamps. Edison and his team of engineers failed to consider the ship's vibration, which caused the lampholder assembly and the lamp filaments to break. The solution was creating string lights that would dangle and swing to absorb the vibration. So, out of failure, came the first string lights that are often utilized at many current venues. Today, the UL standard for safety of incandescent lampholders is UL 496: *Edison Base Lampholders*, which would not permit wood as a means of securement of a live part.

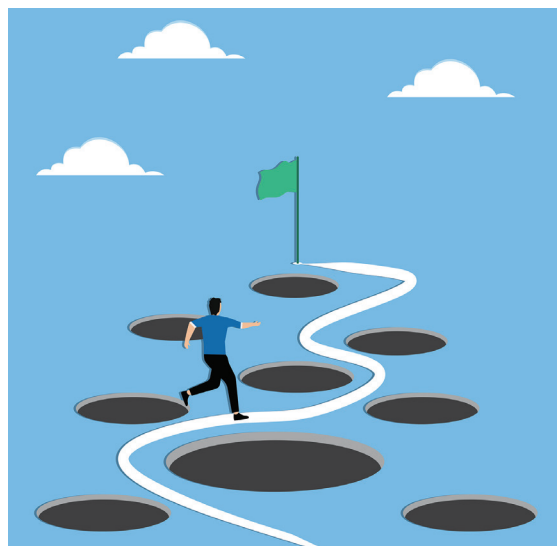
Lighting prior to the electrification period was from candles, oil lamps and gas lighting fixtures. Metal piping was run through-



So, out of failure, came the first string lights that are often utilized at many current venues

out buildings where the lighting fitting was secured. Edison was keen to realize that the electric wires for his new lighting scheme could be run in the obsolete gas pipes using a little fitting called a "crowfoot." Later, steam heating pipes were also used; however, the problem was the steel pipes were corroded on the interior from prior use, and the insulation on the conductors would become abraded, shorting the circuit and creating smoke and, in some cases, fire. The current electrical code NFPA 70, published as the *National Electrical Code* by the National Fire Protection Association, outlines raceways for conductors and does not permit cast or wrought-iron pipes for the passage of electrical leads.

Fast forward to the late 1890s where much experimentation took place to create a better lamp source with more light output and longer life than the incandescent lamp. Scientists such as Michael Faraday, James Clerk Maxwell, Heinrich Geissler and Julius Plücker, among others, studied the ability to create light with a partially evacuated glass tube through which a current was passed, thereby creating various forms of the fluorescent lamp that is so ubiquitous today. But the scientists realized that a means of controlling the lamp current and starting voltages was required,



and so the fluorescent ballast was born. Electrical current passing through the lamp and ballast did, however, create heat and, if left unchecked, the lamp and associated ballast would self-destruct. To decrease the temperature of the ballast, a metal case was used that contained a potting compound. The first material used as that potting compound was bituminous material, which is essentially a man-made product—*asphalt*.

Two significant problems occurred during the early days of fluorescent lamps and ballasts, the first being that if the enameled wire coils became overheated and shorted, it would cause thermal runaway—but then the bituminous material ignited and schools, hospitals and the like would suffer a fire and black billowing smoke. UL 935, *Fluorescent Lamp Ballasts*, required revision to address the safety concerns. The reworked standard addressed the potting compound, which was less bituminous and included more UL Recognized Components that were tested for electrical and thermal properties. The bigger change was that fluorescent ballasts required a thermal protector such that Class P was compulsory for all fluorescent ballasts except for small reactor types.

We can delineate many more examples of learning from technological mistakes; perhaps I will attack the topic again in 2025. My final parting comment for 2024 is to please be safe with festive lights and decorations,

check all wires and electrical connections for damage, follow manufacturers' instructions for safety and ensure that all exterior displays employ products that are suitable for outdoor use.

Jerry Plank, LC, is the CEO/founder of Wilger Testing, an accredited third-party laboratory testing for product safety and performance.

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TECHNOLOGY

Axel Pearson

Integrated Lighting Systems Applications show interoperability, savings, comfort

Buildings are becoming increasingly more energy efficient—and making life better for occupants thanks to a variety of innovative systems. LED lighting has dramatically cut energy use, with sensors in luminaires adding to the savings by assessing the amount of incoming daylight and dimming the lights accordingly. Sensors also turn lights Off when no one is detected in the space. The sensing platform in lighting systems has become a focus for the U.S. Department of Energy (DOE) and its partners—integrating these sensors with non-lighting systems like HVAC can be key to decarbonizing the nation’s buildings while increasing their energy efficiency. For example, HVAC can use lighting sensors to control air flow, humidity and temperature. HVAC can also work with upper-room or whole-room germicidal ultraviolet (GUV) lighting to remove pathogens from interior spaces with each exchange of air.

Achieving interoperability of lighting and other systems designed and manufactured by different industries has been a challenge, as detailed in a previous “Technology” column (*LD+A*, August 2024) authored by my colleague, Michael Poplawski. That said, buildings across the country are coming online with systems that function together, a fact

that DOE promotes through its Integrated Lighting Campaign (ILC), which works with national partners to make buildings more energy efficient and comfortable for occupants. Through the campaign, lighting industry professionals share knowledge, lessons learned, best practices and resources so everyone can take advantage of savings opportunities and the benefits of integrated systems. The ILC recently recognized 16 organizations for exemplary commitment to energy efficiency and environmental responsibility in their buildings. A few examples highlight the possibilities of lighting as a springboard to optimize building performance and the occupant experience.

The Indian Community School (ICS) in Franklin, WI, is a private, inter-tribal school that has provided a distinguished learning environment to the American Indian community of metro Milwaukee for 55 years. Focusing on that critical environment, ICS upgraded its lighting to tunable-white LED fixtures with DALI controls, including dimming, daylight harvesting and occupancy sensing. Classroom fixtures are individually addressable and can be adjusted via wall unit or mobile app. Employing DALI enables integration with the school’s building automation system, allowing occupancy sensors in each classroom to feed data



Testing has shown that air exchanges in the HVAC system have been beneficial in tandem with GUV to control COVID-19 and an MS2 challenge pathogen

to the HVAC system via BACnet/IP as well as allowing for fault detection and diagnostics (e.g., finding errors with the luminaire, driver, keypad, DALI processor or sensors).

A second ILC partner, Rémy Cointreau USA, also chose a path to greater energy savings through systems integration. Rémy Cointreau is a leading international distributor of premium spirits and opened a new U.S. headquarters in late 2023 on the 20th floor of 3 Times Square Tower in New York City. The 30,000-sq ft space features an open office plan and indoor and outdoor work and meeting spaces, as well as a wellness and exercise studio. The design called for LED lighting installed with low-voltage DC wiring that connects drivers, lighting sensors and air-quality sensors. Drivers allow for energy monitoring and data collection on light levels, temperature and motion. Installed into the lighting system are integrated air-quality sensors that enable operators to ramp up ventilation in occupied spaces for healthier, more-comfortable indoor air quality. The facility’s manager can run multiple reports on lighting, indoor air quality, temperature and more using a web-based dashboard. This combination of features uses approximately ¼ of the energy of a fluorescent system and provides advanced

Photo: George Lambros Photography.



Indian Community School in Franklin, WI.

control capabilities such as occupancy sensing, daylighting, high-end trim and scheduling.

Not far off, Avenues World School—New York Campus, a 16-grade independent school with nearly 2,000 students in Manhattan, installed GU... luminaire... to reduce the spread of COVID-19 and other airborne infectious diseases. Upper-room luminaires were employed in the cafeteria, movement areas, gym areas, choral classrooms and theater. Whole-room, far UV-C luminaires were installed in all classrooms. Testing has shown that air exchanges in the HVAC system have been beneficial in tandem with GUV to control COVID-19 and an MS2 challenge pathogen in both classrooms and the 40,000-cubic ft cafeteria.

A fourth project earning praise from the ILC involved GUV at Utica University in upstate New York. During the pandemic, the university installed upper-room GUV technologies to reduce the spread of COVID-19 and other respiratory viruses in 56 classrooms, weight rooms and locker rooms, as well as exam rooms and the waiting room



Rémy Cointreau USA Headquarters in New York City.

at the campus health center. Independent evaluation of one of the classrooms and the health center found GUV installations delivering more than five air changes per hour to reduce the spread of COVID-19 with low energy use. The university also evaluated the installation of HEPA filters in the HVAC system to reduce disease spread

but found the GUV system to be much more cost-effective at 25% of the installation cost of the HEPA upgrade.

These projects highlight the possibilities when seeing lighting controls as the workhorse for integration with other building systems—and the backbone for grid-integrated efficient buildings. By helping buildings be smarter about the amount and timing of energy use, integrated lighting systems can help in our effort to decarbonize U.S. buildings by 2050.

Axel Pearson joined Pacific Northwest National Laboratory in 2022 as an energy efficiency project manager, supporting the Energy Efficiency Technologies team with a focus on energy efficient lighting and controls.

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HURRY BACK!

Walt Disney Imagineering continues to reanimate haunted attractions

By Craig Causer

As each October approaches, there's a proliferation of haunted attractions designed to scare the bejesus out of willing visitors. "Get out!" is often the unwelcoming operative term in such environments, followed by visitors' screaming and scrambling out of danger. But for more than 55 years, one iteration of the haunted house has thrived with a more welcoming approach—Disney's Haunted Mansion. Created to meld elements of apprehension, spookiness, humor and whimsy, Disneyland's Haunted Mansion and Walt Disney World's The Haunted Mansion have shown that, crafted carefully, horror can be hospitable.

The original Haunted Mansion, which opened in Anaheim, CA, in August 1969, features Greek Revival architecture, which is easily identifiable by its columns, portico, decorated cornice and balconies



with iron railings. In October 1971, The Haunted Mansion was unveiled in Orlando, FL, to resemble a Dutch Gothic style reminiscent of lower Hudson Valley, NY, to fit the Colonial America setting of the Liberty Square area of the park. Exterior illumination techniques vary between the two due to both the divergent architecture and their locations in each park.

“The exterior façade of California’s Haunted Mansion attraction is illuminated in a considerably more subtle manner than Florida’s,” explained Kent Sheranian, manager, Show Lighting Design, at Walt Disney Imagineering (WDI). “Because the Disneyland attraction is located so closely to other facilities with a ‘real-world’ story, like the Tiana’s Palace and Harbour Galley restaurants, a more realistic feel is warranted to not create a visual dissonance within the neighborhood.”

At Disneyland, the illumination of the façade is accomplished by using colored glass gobos in LED-based, outdoor-rated, profile spotlights, which are placed on a tall pole hidden within the canopy of a large tree near the attraction entrance, creating a “moonlight through the trees” feel on the façade. The lower levels of the façade are illuminated using the ambient light provided by decorative light fixtures that also illuminate queue areas. WDI admits that it is not a very complicated or high-tech design choice, but often the simplest solutions provide the best results.

“The Haunted Mansion at Magic Kingdom... has a foreboding presence, which can be seen from different vantage points throughout Liberty Square,” said WDI’s Senior Show Lighting Designer Joshua Iscovich. “We take advantage of that at night by employing theatrical lighting techniques to help tell our story. We use narrow-lensed, controllable, LED floodlights to accent the various pieces of ornamentation high up on the façade. We employ wider-lensed LED flood units [to emulate] washes of gentle moonlight from specific directions and angles. Physically attached to the façade, we rely on large decorative fixtures and practical light in windows [and] use warmer color temperatures in those fixtures to bring contrast to the architecture. The balance between the warmer practical and more-saturated theatrical systems of light keeps the façade grounded in the 17th century world of Liberty Square, but with hints of the experience that awaits our guests within.”

To get to the bowels of both mansions, guests navigate through a queue, which hints that the





2.

1. Exterior illumination of Walt Disney World's The Haunted Mansion.

2. Imagineers maintain a "low-tech" character and attitude in the use of fixtures and how they are programmed.

3. Pepper's Ghost: a classic parlor trick that employs light and reflection to bring the ballroom to life.

4. Each scene has several layers of lighting, revealing details in a specific sequence to enhance storytelling.

experience is more than your run-of-the-mill "jump-scare" attraction. "Perhaps, The Haunted Mansion's best magic trick is how it manages to blend humor and apprehension through the entire experience," noted Iscovich. It employs gothic-style decorative fixtures through the queue to help reinforce the time and place in which the story is set. Colored glass is used in queue fixtures to give the light a heavier mood than is witnessed outside the mansion grounds. The goal is to provide illumination that is stately and somber—but not scary or unwelcoming—for guests of all ages.

At Disneyland, the more-obvious mix of humor and apprehension doesn't occur until guests have entered the interior of the attraction, where odd things begin to appear. As a well-maintained mansion rather than the more-traditional dilapidated haunted house, the exterior of the Disneyland attraction plays things considerably more conventionally than its interior, and the style of the lighting reflects "real-world" character. While there are humorous nods found in the sculptural elements in the queue, such as many pun-filled epitaphs on tombstones, the accent lighting for props in the queue area stays within a traditional "moonlight" story palette, Sheranian said, but with a color choice that shifts a bit more green than might normally be used—to make the area feel a just a little "off"—with a slightly creepy edge to it.



4.



At the time of this issue of *LD+A*'s publication, Haunted Mansion in California was in the process of completing work on an expanded queue and grounds with enhanced theming. Storytelling using decorative "themed" lighting fixtures is the primary way that WDI incorporates unique lighting in the new outdoor queue.

"We have selected many fixtures that feel generally normal in their form but may have small oddities included in them like faces in their castings, figurines incorporated into their design or odd forms in their shapes," explained Sheranian. "In one of the new garden areas, we have designed a fixture that references Madame Leota's crystal ball. Each area of the new queue has a unique story, and the lighting fixture selection reflects those stories, from lampposts with bas-relief flowers cast into them in the Magnolia Park area outside of the attraction walls to the gothic-style fixtures within the new mausoleum area."

As "foolish mortals" are welcomed into the mansion's foyer by the voice of the Ghost Host, the attraction begins to unleash classic parlor tricks, many of which have been mystifying people before

The illumination of Madame Leota's floating head is a balancing act—too bright and suspension wires are revealed, too dim and the elements are hidden.

the idea of a theme park was ever conceived. Illuminating ghastly portraits, floating objects and dancing apparitions involves a control system, with dimmer racks and a lighting controller running the interior lighting, as well as a processor integrated into Disney's larger park-wide lighting control system running the exterior lighting. Due to the age of the attraction and its classic nature, the level of complication regarding light fixture and controls selection is not very high. "We want to avoid making the show feel high-tech, and so, while some of the technology we use may be very current, we try to maintain a very 'low-tech' character and attitude in the way we use the fixtures and how they are programmed," Sheranian said. WDI employs line-dimmable, LED-based fixtures with color filters—as opposed to data-driven units—since so much of the lighting in the attraction remains at set levels throughout the operating day. With older Disney attractions like Haunted Mansion, there is a simplicity to the character of the lighting, and introducing a more modern character to the lighting design can take the focus away from classic scenic elements and place it onto the lighting, so designers



are careful in their technology upgrades to try to maintain the initial, simple look and character of the original lighting.

Beneath this “simple” visual character, however, lies efficient technology. Advancements in LED UV technology during the last decade have been installed throughout the attraction, providing a considerably longer-lasting UV output than the previous 400-W ceramic metal halide fixtures. Another advantage is that the fixtures generate almost no heat, Iscovich added, which provides a more consistent show for guests, as well as being more sustainable for Disney’s maintenance teams. The lighting in Haunted Mansion at Disneyland was upgraded from halogen- or metal halide-based fixtures to LED-based sources in 2020, and the old control system that was built up over the years out of many eras of control—from autotransformer dimmer banks to Disney-built flicker dimmers to household rotary switch-type dimmers—was changed to a consolidated dimming system.

Whether it’s the Anaheim iteration or its sister site in Orlando, the mansions play with the time-tested haunted attraction tradition of balancing

Front lights on changing portraits must be placed at the right levels and timed perfectly for successful scrim-like effects.

darkness with just the right amount of illumination. Disney directs the guests’ view by highlighting important elements while keeping dark the areas they don’t want them to see. The goal is to maintain a feeling of mystery, which diminished light levels help achieve by making the edges of scenes fall off into shadow.

“With a heavy visual effects-laden attraction like Haunted Mansion, we need guests’ eyes to adjust fairly quickly to low-level illumination, and so we reduce the levels in the attraction to minimally safe levels as soon as guests enter the attraction proper,” said Sheranian. “The time spent in the Stretching Room and Portrait Hallway scenes allows their eyes to adjust fully by the time they enter the ride vehicles and be able to perceive the show in the appropriate low-level conditions.”

Some of Iscovich’s favorite things about The Haunted Mansion are the little details that allow a guest’s imagination to fill in its own plot points about the show. “To help coerce your imagination, we keep a rhythm of areas that are illuminated and those we let fall into darkness,” he revealed. “We might occasionally program a flicker from a light



fixture to momentarily reveal an object. A great example is how we wash some walls with light, allowing you to clearly see eyes and faces in the wallpaper. A moment later, in the darkness, you may momentarily catch a glimpse of a chair with a face in it. The fun is asking yourself, ‘Did I just see that?’”

Like magicians, Imagineers never want to reveal their tricks. One of the biggest challenges in creating Haunted Mansion attractions is addressing different elements in a scene. The balance between the foreground scenic elements and the “ghost” elements is critical in many of the scenes with special effects: if the foreground is too bright, it diminishes the visibility of the “ghosts,” but if it is too dim, you begin to see the mechanics of the “ghost” figures. In the Endless Hallway and Séance Circle scenes, if the light on the floating candelabra or Madame Leota’s floating ball is too bright, you begin to see the suspension wires, but if the light is too dim you can’t see the elements well enough. The front light on the changing portraits in both the Portrait Gallery in the queue and the Attic scene must be at just the right level and timed perfectly in their programming for the scrim-like effect to work properly.

“We want you to see the show and only the show,” Iscovich said. “In the case of the lighting design, that means only seeing our practical fixtures

Exterior illumination of Disneyland Paris’ Phantom Manor.

which play a role in the story. It was important to the original team that all other sources remain hidden from view, and we honor that to this day. That presents many unique challenges. For anything overhead, we light in direction of travel, so the guests and the Doom Buggies are always facing away from the light source. We try to leverage floor and corner pocket positions as much as possible. We hide light fixtures in all sorts of props and fun places. In fact, we work closely with our props team in our design phases so they can design custom props to hide our light fixtures.”

The popularity of the Haunted Mansions at the domestic parks eventually spawned a new vision in Paris: Phantom Manor. Launched in 1992, several scenes from Haunted Mansion were reimagined to create a darker theme for the European crowd. Phantom Manor is set in the Old West and focuses on a doomed wedding and a frightening evil spirit, the Phantom. According to Ezra Hommel, principal, Show Lighting Design at WDI Paris, Haunted Mansion is very abstract compared to Phantom Manor, which is more story driven. During the attraction’s refurbishment in 2019, WDI pushed the lighting design toward a more-realistic cinematic direction. Specific color palettes, gobo patterns and intensity settings created a proper balance



Left: Illumination in the Paris attraction helped establish a more dramatic and sinister setting.

Right: Exterior illumination of Hong Kong Disneyland's Mystic Manor.



between what is physically shown within the scene and where the imagination from guests takes over.

Cultural differences also influenced the lighting design. Within the theme of Phantom Manor, it was important to understand the relationship between light and human interpretation. The attraction includes a more dramatic, sinister and scary setting with major influences and inspiration coming from European stories such as *The Phantom of the Opera* and many gothic legends. For Phantom Manor, the choice of color, direction and shadow has a profound effect on perception, and it triggers more specific feelings elicited from the tales that are unique to the region.

“One of the tasks for a lighting designer is to study the light in several environments and reflect that in the lighting design to evoke an emotional response for the viewer,” Hommel explained. “Light, shadows and darkness contribute to setting the space to convince the viewer they are there. Light is responsible for when or what you want the viewer to see and how they feel about it. Each scene has several layers of lighting, revealing the scenery and characters in a specific sequence to enhance the storytelling in the attraction. Every layer is built with its own lighting equipment type to achieve the desired lighting purpose for the specific setting within the interior Victorian-style manor, exterior

graveyard, catacomb and canyon scenes.”

In parts of Asia, including China, spirits are revered and not recognized as being spooky, silly or irreverent as in American culture. As a result, when Mystic Manor at Hong Kong Disneyland opened in 2013, it bypassed the undead and focused on a supernatural journey.

Mystic Manor is the home of Lord Henry Mystic, eccentric adventurer, explorer and collector of art and oddities, and it has become regarded as one of the foremost private museums in the world. During the museum tour, Albert, a young monkey and Lord Mystic's companion, opens a newly arrived artifact, a carved music box reputed to possess strange powers. To Albert's amazement, an enchanting tune flows from the open box, along with a magical and mystical energy. Whatever this energy touches—artifact, statue, painting—the object springs to life. Albert chases the drifting musical dust from room to room, getting deeper and deeper into trouble and guests follow Albert, sharing his adventure.

The lighting design of Mystic Manor seeks to create the ambience of a private museum as well as the mysterious and mystical ambience of its various rooms. The lighting design, along with the music, builds upon the energy and tension as the ribbon continues to wreak havoc in the museum.



“Haunted Mansions are primarily lit with black light to create the darker and spookier ambience more commonly associated with haunted places,” said Jo Phoa, director, Creative Design at WDI Hong Kong. “Mystic Manor is a primarily white-light attraction, as it seeks not to create a spooky ambience, but the story and ambience of a stately private manor and museum, in which you are on a mysterious and mystical journey. There are common lighting techniques that create an air of spookiness, [such as] low light levels, strobe lights, candles and candelabras, red light. Other common lighting colors that are utilized primarily in the Western culture, and not common to Asian cultures, are green, purple, blue and white. The ambience is typically more enhanced when paired with spooky music and scenic elements.”

While the varying mansion and manor attractions were constructed with an eye on cultural awareness, one common throughline is energy efficiency. In Phantom Manor, nearly all lighting fixtures

To provide a mysterious and mystical journey, Mystic Manor is a primarily white-light attraction.

contain an LED source. “In this specific dark setting, it was important that design was always faithful to the collaborators and storytelling, which was tough to accomplish with LED technology,” recalled Hommel. “We wanted to realize a similar look and feel as tungsten-based lighting fixtures. It required a lot of testing and adjustments to find ways to mimic the characteristics of tungsten-driven light sources into an LED-based design. The balance of the show isn’t very bright; color behavior, dimming and the lighting backbone system were some of the exciting and fun design challenges within this wonderful project.”

Energy-efficiency also remains at the forefront of the Disneyland Resort as it works toward being carbon-neutral by 2030. In 2020, all the show lighting throughout the entire Haunted Mansion attraction was replaced with LED-based lighting sources, and Imagineers have completed or are working on similar efforts in all the other attractions and facilities throughout Disneyland. At the same time, particularly in Disney’s classic attractions such as Haunted Mansion or Pirates of the Caribbean, WDI is careful to use lighting fixtures with very similar characteristics to the original units to maintain the “classic” look of the attraction.

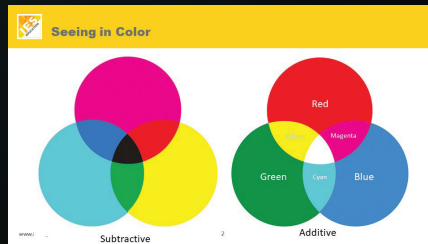
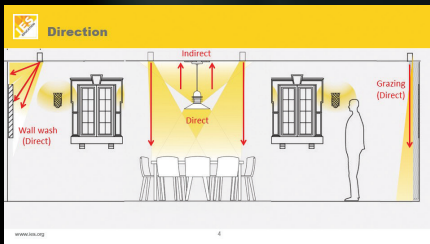
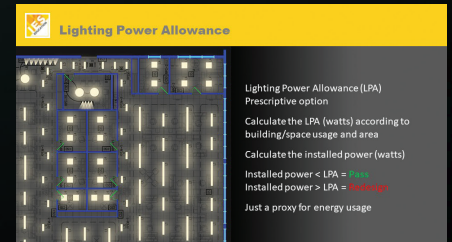
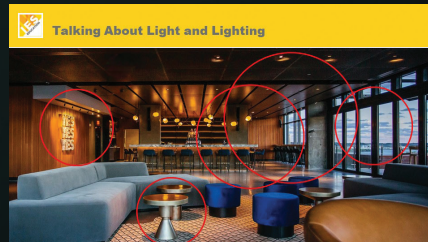
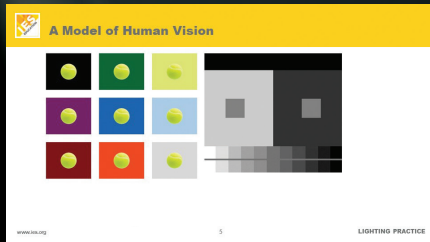
“LED technology has advanced to a point where it has become a rare instance where we cannot find an acceptable LED-based replacement fixture or lamp, though in some instances we need to pull new lighting control wiring to fixture locations in order to control them properly if they need to dim up from zero live in front of guests,” explained Sheranian. “Haunted Mansion does have some fixtures with this type of requirement, though the majority of the lighting in the attraction does simply remain at static levels. Lamps, especially miniature lamps used in smaller candle-type light fixtures, can still sometimes be tricky, but even there we have usually been able to find acceptable LED-based options.”

Effective illumination has been a linchpin to the decades-long success of these Disney attractions across the world, so much so that even the spirits have taken notice. Take it from the Ghost Host himself.

“And now, a carriage approaches to take you into the boundless realm of the supernatural. Take your loved ones by the hand, please, and kindly watch your step. Oh yes, and no flash pictures, please. We spirits are frightfully sensitive to bright lights.” ©

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A HOWLING GOOD TIME

“The Legend of Luna” extends Great Wolf Resorts’ storytelling canvas

By Michele Zimmerman

Picture a cozy living room inside a log cabin on a chilly night. The fireplace is softly glowing, a dark-wood mantel is adorned with treasures from the forest, candles flicker in the windowsills, and you’re reading a fairytale aloud from a worn, leather-bound book. Now, take that scene and expand it to fit inside the Grand Lobby of North America’s largest indoor water park resort—and watch the fairytale play out before your eyes. “The Legend of Luna” at Great Wolf Resorts’ Perryville, MD, lodge is a new animated, nightly feature crafted with the magic of custom illumination, pixel mapping and a bespoke control system.

The immersive display tells the tale of a snow-white wolf pup finding the courage to be herself



and sing her own song within her wolf pack; with the help of a design team compiled by BRC Imagination Arts, Luna's dynamic story has been made modular and will soon be told in new Great Wolf locations in Connecticut, Florida and Texas.

"Light, in all its forms, is critical in taking the audience on the journey with Luna," explained Emanuel Treeson, founder and principal of NYXdesign, a firm brought onto the project via its longstanding relationship with BRC Imagination Arts. "Our goal was to extend the canvas of our storytelling from the main screen to the entire Grand Lobby environment. For example, when Luna is a very young pup playing in the autumn leaves, the room is painted in tones of amber and yellows. When Luna is feeling alone and shunned, the room takes on cold

Lights allow the story to take place not just on the display façade but all across the audience and room.

tones of pale and dark blues, getting even darker when Luna feels most alone. The room expands with light and color when Luna saves the pack. Her magic takes its form not just on the main screen placed high on a fireplace façade, but across the walls, ceiling and floor of the lobby. With each enchanted howl, there are bursts of light in jewel colors of cyan and lavender. Light dances across the central fireplace and the audience itself."

To create the whimsical guest experience, as well as provide the necessary illumination for seasonal celebrations and daily activities like yoga sessions and family dance parties, designers needed a carefully coordinated lighting strategy. It begins with custom chandeliers and a fireplace façade that do more than meets the eye. Ten



chandeliers, designed by Treeson in collaboration with BRC Imagination Arts and manufactured by Neatherlands-based firm 181, appear to be simple: hoops made of metal, each with 24 individual glass light shades. However, hidden within the traditional luminaires are complex technological layers.

Glass light sources around the hoops flicker as if real they were candles, due to individually DMX-addressable emitters in three separate colors (an ultra-warm amber, a warm 2700K and an ultra-cold 8000K) pixel mapped to evoke the visuals of organic flames. Linear Flex grazers, also by 181, hidden within the hoops of each chandelier illuminate the lobby's ceiling with saturated colors. Furthermore, the false fireplace can shift in color due to additional Linear G36 grazers by 181 that are cut to custom lengths and hidden within the mantel.



Top Left: Lighting cues are set to match narrative plot points like changing seasons.

Bottom Left: Custom chandeliers conceal numerous high-tech, multi-color solutions.

Right: LED bullets within the frame around the hero screen are virtually invisible until they light up with color at key points of the narrative.

Beyond the multi-purpose chandeliers, the team incorporated numerous architectural and theatrical lighting elements into the scheme. For example, sconces by 181, with individually controllable up- and downlighting, add another layer of dynamic capability to the lobby; in using grazing fixtures from the same manufacturer, the team was able to ensure color matching across the space and produce more than just the nightly show. "We created a space that lives and breathes throughout year to delight and surprise lodge guests," said Treeson. Additional architectural elements include RGBW Chroma-q Inspire XL fixtures in the high ceiling of the lobby and ETC Navis recessed downlights in low-ceiling spaces. The former fixture type provides unsuspecting white light during the day that transforms into a dynamic color-changing system at night, while the latter fixture type helps to create what appears to be a seamless, single wash of light that expands across various ceiling heights.

Theatrical lighting elements, and surprising use of the picture frame that displays Luna's animated



journey, also aid in setting the perfect immersive scene for guests. “The heart of the theatrical lighting system consists of the Ayrton Diablo and Mistral fixtures. These are compact, high-performance LED automated lights that provide consistent quality, color and brightness,” explained Treeson. “The Diablos and Mistrals are essentially the same fixture, with the main difference being that the Diablos come equipped with a full-field shutter system, allowing for more precise control over light shaping. We tucked [Diablos] away from the audience’s direct line of sight in the show’s lighting cove. The Mistrals, on the other hand, are recessed into ceiling cavities to accommodate the lower sightlines of the audience below. To blend these fixtures seamlessly into the environment, we employed custom RAL-colored covers that match the ceiling’s color, along with circular housings that concealed most of the fixtures.”

Then, placed within the 6-ft by 9-ft hero screen frame on the fireplace are robust LED bullets with PixLite Bright String from Advatek Lighting, which virtually disappear—until they light up at important moments during the fairytale. Finally, random patterns of light to emulate stars in the night sky are laser fired at the entire façade for an additional layer of experiential enchantment.

Two complex control systems by ETC, a SMPTE timecode and astronomical clock, ensure that the show goes on without a hitch. The display is so complex, Treeson noted, “We needed ETC to unlock the total number of control channels that the Eos [system] could control to allow for the sheer scale of the control needs of the show. The chandeliers alone require 18 DMX universes of control to function.”



A SPARK OF IMAGINATION

The dual-sided, 30-ft tall fireplace façade in the Grand Lobby not only displays Luna’s animation but also recreates the welcoming aesthetic found in the Grand Lodges of National Parks (large spaces that blend American and

European design styles with themes of nature to form “parkitecture”).

While key to the project’s success, the theatrical hearth produced one of the project’s most challenging design aspects: the illusion of flames.

“The faux fire’s flames are created with Ultrasonically produced super-fine mist, lit from below,” explained Treeson. “Off-the-shelf mist units were retrofitted with custom RGBA LED boards from GLP and several Precision Projection Frame units to give the fire life. This approach allows the flames to take on [custom colors], matching story beats as the tale unfolds. To build out the fireplace and deepen the flame effect, we concealed an LED screen that sits behind the faux logs and a printed brick mesh that displays animated flames, smoke and embers. To round it all off, we used a multi-unit MDG fog system that drives the fireplace’s larger smoke effect. We found that by layering different sources and angles together, we could create a far more successful illusion.”

Left: The lighting strategy factors in illumination for daytime activities.

While Eos operates the theatrical illumination, a Paradigm system controls architectural fixtures in the lobby, retail areas and the lodge’s restaurant. The SMPTE timecode aligns the animated video of Luna’s journey to all of the lighting, laser, sound and special effects to precise cues down to $\frac{1}{30}$ th of a second. Finally, the team implemented an astronomical clock to maximize the use of daylight, allowing for live adjustment of light levels, providing the nature-themed resort with a green thumbprint. ©

THE DESIGNERS | Emanuel Treeson, Member IES, is founder and principal lighting designer of NYXdesign.

Kurt Schnabel is a system designer with Clearwing Systems Integration.

Josh Selander is a lighting programmer.

Nils Pormann is a notch programmer with Dandelion & Burdock.

Edward Hodge is BRC vice president of creative and innovation and acted as a project creative director.

Matthew Solari is BRC Vice President of creative and story and acted as a project creative director.



Photos: Leo Torri

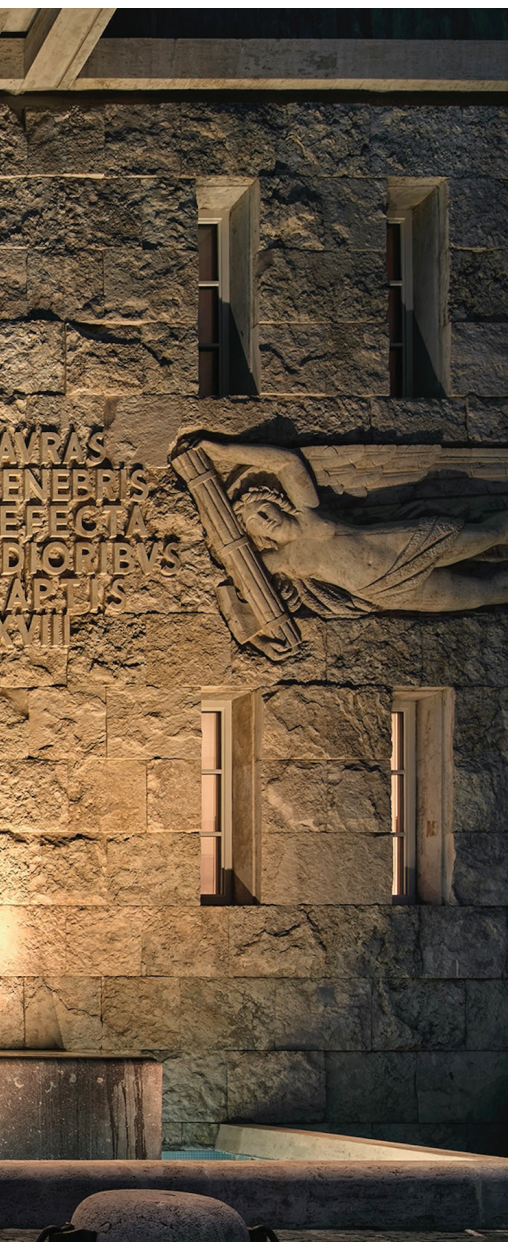
ELEVATED HOSPITALITY

Bulgari Hotel Roma offers rationalist architecture, opulence and rich textures

By David Shiller

Nestled in the heart of Rome, the Bulgari Hotel Roma stands as a tribute to the illustrious legacy of Sotirio Bulgari, the legendary jeweler famed for adorning the world's stars of stage and screen. As the ninth addition to the Bulgari Hotels & Resorts collection, this luxury resort opened its doors in June 2023, embodying the essence of the Eternal City by seamlessly integrating rich history with modern sophistication.

The new Bulgari Hotel Roma occupies a rationalist architecture building, built circa 1937, that faces two of Rome's important landmarks: the Ara Pacis and the Mausoleum of Augustus, the first Roman Emperor. A major restoration incorporated refined, Italian elegance into every detail



of the hotel's design, including its 110 rooms and suites, five distinctive restaurants, indoor pool, spa and boutiques. Imbued with the history and richness of Rome, the project earned the title of "Best Hotel 2024 In the World" by Virtuoso Travel. The restoration required over 300 skilled workers, with construction occurring seven days a week for more than three years.

The hotel's interior is decorated in sumptuous materials and rich textures—further accentuated by the lighting scheme—and in striking contrast with the disciplined, rectilinear architecture of the building's exterior. Interiors feature Mediterranean marble and adhere to four traditional Roman color palettes. For example, in the entrance foyer, an opulent

Left: Grazing enhances material textures and architectural details, bringing attention to the façade's symmetry and grandeur.

Right: A hand-blown chandelier and adjustable projectors accentuate a 2,000-year-old statue.

hand-blown chandelier, together with adjustable projectors, enhance the three-dimensional glow of a 2,000-year-old statue of Augustus. A custom floor lamp was commissioned to enhance the design, featuring a bronze column-shaped body, crowned by a satin glass diffuser, casting soft and delicate illumination. At the bar, light directs the gaze and shapes perception with a variety of luminous levels. The bar counter is brightened with precise grazing that highlights the textured bar front.

Marinella Patetta, architect and founding partner of Metis Lighting, emphasized the importance of the lighting design in elevating the hotel's architectural narrative. "The lighting design principles were well-defined from the beginning to respect



the immense historical heritage of the place and elevate every architectural detail with the correct contribution of light.” Patetta added, “Our intent in the lighting design was very clear: seamless integration with the architectural project in order to balance the aesthetic rigor of stone materials with rich textures and finishes, while highlighting art masterpieces.”

In keeping with this intent, an in-depth study of light fixtures was performed to meet requirements of maximum efficiency, high quality and deeply shielded light sources. The incorporation of customizable pre-set lighting scenes creates a variety of intensities and effects, allowing optimal use of the space, visual comfort and energy savings.

This custom floor lamp combines a bronze column-shaped body crowned by a satin glass diffuser to create a soft ambience.



From the concept phase, the major restoration of the nearly 100-year-old building imposed numerous constraints. One such hurdle was hallway illumination: the ceiling height was low and required accommodating mechanical and plumbing elements within it. The solution was to illuminate all the corridors with discreet downlights positioned inside a dark linear cove, also housing various mechanical, electrical and plumbing components. Patetta shared, “This dark trace creates a luminous rhythm, while simultaneously illuminating the precious Bulgari Heritage artwork on the walls.”

Reflecting on the impact of the illumination on the overall atmosphere, Patetta noted, “The hotel embodies quintessential Italian character and Roman identity. Light plays a crucial role in emphasizing and elevating the brand’s values and pillars, creating a poised, gentle atmosphere that characterizes the spacious rooms and suites, creating relaxed luxury and, ultimately, ensuring an exceptional experience for the hotel’s guests.”

Inside the guest rooms, a serene and intimate atmosphere is achieved through carefully curated lighting accents. Diffused light gently outlines the curtains, while concealed low-profile illumination within round ceiling features emphasizes the



geometric motifs of the design. Multiple layers of indirect light sources contribute to a sophisticated and intimate environment, where deeply shielded downlights blend seamlessly into the backdrop, drawing attention to art pieces and points of interest.

Recessed lights, integrated into timber, plaster and marble ceilings, provide dramatic illumination in both public and private areas. The innovative use of building information modeling allowed for the development of bespoke solutions that integrate lighting harmoniously throughout the space, adding depth, warmth and visual hierarchy.

Exterior lighting highlights the grand sculptural character of the hotel façade, utilizing tailored color temperatures to bring out mosaic narratives, relief carvings and Latin inscriptions. Careful attention was devoted to re-lamping historic lanterns and ensuring magnification of relief-carvings, with grazing light profiles. Grazing accentuates and enhances material textures and architectural details, bringing attention to the façade's symmetry and grandeur.

The hotel's namesake, Sotirio Bulgari, was renowned for his mastery of the ancient "Cabochoon"



Pictured Left and Right: In guest rooms, light adapts to guests' preferences, with fully customizable, pre-set selection of scenes, enhancing beautiful details while encouraging wise energy use.

gem-cutting technique, which captures and enhances the natural beauty of gemstones. In a similar fashion, the lighting design at the Bulgari Hotel Roma is meticulously crafted to enhance the facets of elegance and character of the hotel's artwork, stone textures and architectural details.

This luxurious establishment is not just a hotel; it is a finely crafted gem, echoing the legacy of its namesake and celebrating the art of *la dolce vita*, within the heart of Rome. With every detail, the project invites guests into a world where history and modern luxury intertwine, creating an unforgettable experience that resonates with the soul of the Eternal City. ©

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ACCENTUATE THE POSITIVE

Enhancing the guest experience in hospitality spaces

**By Chip Israel, Nick Bleeker, Peter Hugh and
Emlyn G. Altman**

Hospitality spaces have many areas that are diverse, with unique comfort, safety, performance and ambiance needs for their employees and guests. As a result, effective lighting is essential for hospitality applications such that many ownership groups and property operators are mandating that a lighting designer be included on the creative teams.

Designers have a responsibility to use lighting to emphasize the theme, feel and personality of projects like hotels and/or casinos. More importantly, lighting can help guide new guests throughout properties, enhancing their experience and well-being. People are phototropic, like moths attracted to light, so designers can use lighting to reinforce graphic wayfinding. This experience begins with effective façade lighting. Illuminating the façade



allows a building to become a beacon, which often is more impactful than a single sign on top of a structure. Floodlighting is but one technique, but all design solutions must eliminate stray light spilling into adjacent guest rooms and exterior environments. As guests arrive to a site, lighting identifies the vehicular entrances and focus to the *Porte cochere*—once again, using lighting and brightness to lead the guests to the front doors. There is a reason that, for decades, theaters and hotels used “marquee” or clear Edison lamps on strips at entrances—because it worked.

As guests enter lobbies, there is often a focal point that reinforces a property’s décor and branding, and it should be highlighted to create drama through varied brightnesses. More importantly, registration areas should be notably bright, as this

Formerly a hospital, the Cook County Hyatt Home/Hyatt House in Chicago employs façade lighting for columns and architectural features to provide recognition and identity.

helps orient and guide guests to where they can check in. The illumination of desk fronts, accenting of artwork on the back wall or decorative fixtures over registrations are all options that provide visual orientation. Lobbies contain varied spaces such as lounges, concierge desks and bars. One current trend is implementing flexible workspaces that can be used for breakfast in the morning, private meetings and even informal interviews during the day, which can then transition into bars at night. Lighting must be uniquely designed to meet all these visual tasks. To help continue the journey through this space, elevator lobbies should be identified, perhaps with decorative fixtures or artwork illumination, so guests can ultimately get to their rooms.

In guestrooms, two recurring complaints regarding lighting are that there isn’t enough light at the



Photo: Courtesy of Broadmoor



Photo: Courtesy of Hyatt

bathroom mirrors to see when applying makeup or while shaving, as well as insufficient lighting when trying to read while relaxing on the bed. Designers should focus on flattering, warm tones, higher CRI and sufficient illumination at the mirrors. Scones and pendants can work well, and some illuminated mirrors are effective. Backlit or halo-effect mirrors may look nice, but they typically do not provide the required horizontal illumination, so mock-ups are recommended. The strong contrast from the backlit halo effect can make the human eye adjust for this brightness thus reducing their input and perception of the ambient light. Reading lights at the beds can be employed in a variety of ways. It should be noted that many people use tablets or smartphones instead of print materials, which adds another level of glare to consider in the design scheme. Also, ensure that ample illumination is provided at desks and integrated into the closets. Often, solutions work best by introducing lighting into all four corners of the room, many times with the introduction of decorative lamps.

For decades, lighting has been a featured design element in the gaming world. Concealed surveillance catwalks above ceilings have been replaced with high-definition security cameras; so, light levels, veiling reflections and color rendition

The Boadmoor in Colorado Springs, CO, features a traditional lobby that offers comfort via soft uplighting and the use of decorative fixtures.

are all critical. There is an old saying that advises, “Light where the money is.” Table games with stacks of chips, cashier cages and bars are all areas with special lighting needs. Lighting must be functional and brilliant to help attract, entertain and keep patrons energized.

Spas, on the other hand, should invoke a sense of relaxation as soon as guests enter the space. Light levels are typically low, soft, warm and dim, as if illuminated by candlelight. The primary lighting may be from decorative fixtures, architecturally integrated fixtures and soft indirect sources. Illumination may be non-uniform to create places of deeper relaxation or natural wonder. Task lighting should be discrete, easily controllable and may be focused over workstations, salon areas and/or manicure/pedicure stations. Relaxation zones may include almost-theatrical lighting experiences in lounges or pool and spa areas. Finally, and most importantly, remember the vanity area. As guests prepare to leave, lighting should make them look healthy, younger and glowing. Using soft vertical illumination from scones or other sources is essential for visibility while shaving, applying makeup and/or hair styling.

Health or fitness area lighting can be creative and fun while, at the same time, coordinated with the exercise equipment. Indirect sources are often



preferred so that guests are not participating in floor activities or exercise, such as bench presses or sit-ups, while looking up into bright downlights. Pay careful attention to the placement of fixtures near mirrors and televisions on multiple walls to avoid reflective glare or view of concealed light sources. High-energy or relaxing zones for Pilates or spinning might necessitate color changing or dimming. Remaining mindful of dimming zones and controls is essential for flexibility and balanced light intensity within spaces.

Food and beverage are important components to any hospitality project, so always pay close attention to the dining experience. Restaurants may emulate local history or a theme that can be reinforced by the proper selection of decorative fixtures and artwork. Architectural lighting pioneer Ray Grenald said, “For restaurants: light the faces, the food and then the walls.” This is particularly true now as it was during Grenald’s heyday. Illuminating faces can be accomplished with narrow spots reflecting onto a white tablecloth, multiple votive candles or the latest trend: numerous warm, diffuse sources that provide a soft flattering effect. As with spa settings, lighting must make end users and their guests look great in restaurant projects as well. The designer should also account for aging eyes that may require higher light levels to

At the Hyatt Regency O’Hare in Chicago, backlighting of the stone wall in the registration area provides both a pleasing aesthetic and wayfinding to the area.

clearly read menus. If low light levels are requested by the operator, perhaps review the menu’s font size and contrast to assist with visual tasks. Once illumination of faces and food are addressed, focus on the perimeter and architectural lighting, which should be well integrated within the architectural features and coordinated with the interior designer’s concepts.

These are just some of the design recommendations integrated into ANSI/IES RP-9-23 *Recommended Practice: Lighting Hospitality Spaces*, which also includes recommendations for casinos/gaming and other recreational spaces integrated as part of hospitality buildings. The information reflects many years of research and experience from prominent designers and industry professionals who have contributed their time and input. While the field changes and evolves over time with new trends and technology, basic principles of responsible practice for the guest experience remain and are covered in the RP. ©

The IES Hospitality Lighting Design Committee relies on volunteers. If you have a passion for hospitality lighting, consider joining the committee that helps shape the future of this industry. Designers, manufacturers, educators and end-users of all levels of expertise are encouraged and welcomed to join. For more information, please contact Emlyn Altman at ealtman@dlrgroup.com or Nick Bleeker at Nick.Bleeker@outlook.com.

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A closer look at how AI tools' understanding of light doesn't always render accurately.



Photo: AI generated from Midjourney

RISE OF THE MACHINES

Defining goals and boundaries for the use of AI

Ten years ago, the concept of artificial intelligence (AI) was something that you might see in a dystopian sci-fi movie or hear tech executives pontificate on as they sold you software. From the conceptualization of AI in the 1950s, AI always felt like a distant future possibility that would not affect our lives any more than teleportation or warp-speed travel. However, in the last few years, AI has quickly emerged as one of the trendiest topics in modern society—not just for big tech companies but also the design industry.

Perhaps you've heard of ChatGPT or DALL-E, noticed an "AI assistant" taking notes in a virtual meeting or heard that your building information modeling manager is using it to help streamline the drafting process. The newest iPhone has multiple

By Andi Walter

built-in AI features, and it seems that every company has AI chatbots answering customer questions. Some large firms are even hiring AI-specialist teams in-house. The 2023 Writers Guild of America's strike highlighted the urgent need to protect artists', storytellers', content creators' and designers' jobs from being replaced by AI-generated content. The innovations in the world of AI have been swift and are changing every day, so it is crucial for interior designers, architects, engineers and lighting designers to define their goals and boundaries for using AI in their practice.

Before we jump into the benefits, risks and complex considerations for using AI in lighting design, it is important to remember that AI isn't actually "smart." Most of the consumer-facing tools you have likely used or heard about are considered "generative AI," meaning they are generating content based on trained associations found in huge data sets of text and images, including much of what is publicly available on the Internet. AI tools aren't logical and can't think creatively or imagine new realities. They only aggregate, reference and organize information that already exists. This can be a valuable tool, but you can likely already see how lighting design doesn't fit neatly into their framework.

The unique, creative and collaborative world of hospitality projects are a perfect place to begin to understand AI best practices. We live in a hyper-connected world, where every restaurant, hotel and resort is seeking opportunities to provide memorable, novel and shareable experiences. Hospitality clients are looking to draw in visitors with something they have never seen before and hoping it goes viral. So, if we turn to AI tools, how can they help meet these clients' unique needs?

Beginning with the conceptual development phase of a project, using AI image generation is a great exercise to force you to precisely describe what you're imagining. The results of a Pinterest search for "modern tropical restaurant" might return plenty of similar ideas that partially capture the concept in your mind. With an AI tool like Midjourney, you can become fluent in writing prompts that generate robust, detailed renderings. By prompting it with "A modern restaurant with group seating, large tropical plants, natural light and colorful décor," you will generate an image that is influenced by—and compiled from—a whole universe of similar images. It is possible to visualize your ideas quickly and iteratively and create many low-effort options to consider. You can also

use this process to begin to describe a custom fixture you would like to have fabricated to fit a particular space or merge several concept images together to communicate a specific style. All these processes can be significant time-savers and help you create a library of your own unique concept imagery. If your concept image isn't quite right, you can now use Photoshop's quick generative AI tools to enhance and better convey your idea. There is even a plug-in for Revit that can overlay AI-generated lighting on top of 3-D views without ever leaving the program.

The learning curve for using AI image-generation tools can yield some unexpected results, especially for lighting designers who use technical terms and industry-specific jargon. Take, for example, a request to show a grazing effect on an exterior wall. Our practice's initial tests resulted in a wide selection of beautiful images of cows grazing next to brick walls. Over time, you'll learn the logic of the prompts and how to be specific to achieve the desired results. But even with a precise description, many AI-generated images will return ghostly pendants hovering in the air or light with no apparent source. The longer one analyzes these images, the more signs become apparent that they are aggregating rather than designing.

Still, there are some good arguments to be made for the use of image-generation tools. They level the playing field to allow more accessibility for designers with a variety of skill sets to create high-quality renderings. They can help bridge a communication gap between the design team and owners, and the images may spark interesting conversations as part of a charrette process. Their cost is much lower than licensing for professional-grade rendering software, and their speed is unmatched. As designers, the prospect of AI replacing our expertise can be anxiety-inducing, especially when we see photorealistic designs proliferating so quickly into the industry. However, two big things stand on the side of the designer as we face the opportunities and threats of AI technology: basic human empathy and basic physics.

For any designer who has built a new relationship with a developer, owner or architect, it is evident that AI will not replace the emotional intelligence, creative vision and empathy that humans cultivate throughout our projects. AI tools might help you write an email, but they can't expertly navigate sensitive discussions with clients or colleagues to find the best solution for everyone. AI

can't consider the environmental ramifications of its specifications, the acoustics and materiality of fixtures or the cultural nuances or social contexts within which we design. As experienced professionals, we build interpersonal connections and trust with clients and mentor the next generation of lighting designers. While AI can be a handy addition to a designer's creative process, it's still up to us to contribute holistic design thinking, make ethical decisions and use our artistry for the overall betterment of the end user. AI is a tool, but lighting design is an art.

The physics question is more technical but no less important. Designers know that light has profound impacts on our psychology, physiology and experience of a space. Even professional rendering



Photo: AI Generated from Midjourney

Precise language is required when prompting AI tools with industry terminology. This image resulted from the prompt of "exterior brick wall grazing effect."

artists can struggle to communicate accurate light, shadows and reflections that represent a true-to-life feeling in their graphics. Experienced lighting designers know how to communicate their intentions and reassure their clients that the desired mood and function will be possible to achieve. We've all seen AI images with uncanny faces, unusual numbers of fingers or nonsense text on signs. AI renderings used to illustrate lighting are just as likely to show something that is impossible to create in real space, risking a client falling in love with an AI image that they'll never be able to achieve. While it can sometimes drive innovative solutions, most projects don't have the resources to solve these problems of physics.

After taking these limitations into account, you may decide to start trying out AI tools in your firm. Here's some best-practice tips learned through an exploratory year of adopting AI into our practice.

- **Intentional policies and legal implications:** Be sure that your firm has an AI policy in place before rolling out any tools beyond a test group. The firm could maintain a list of trusted tools and confirm their SOC 2 compliance, a third-party source for protecting sensitive data.



Remember that any image or text you upload into an AI tool for it to alter can become a part of that vast data set on which AI is trained. If you don't own the rights to a rendering, you shouldn't upload it to play with AI tools. Similarly, any proprietary drawings, language or even personnel headshots can be tricky areas. It is important to respect the work of other artists and share their work appropriately.

- **Open communication:** When using AI-generated images in a presentation, make sure your team has a consistent method of crediting and sourcing to avoid confusion. Help your team to identify AI-generated images and work transparently to understand the limits and benefits. This can be a fun opportunity for friendly competition to have your current process race against the AI generation and compare the results. Also, remember that if AI is trained on data that is biased toward or against a particular group, it will reinforce those biases, so make sure you're thinking critically about the solutions it offers to maintain an inclusive design process.
- **Consider the environmental and human impacts:** For many of us, our firms openly value sustainability and social justice, signing on to commitments like the Lighting Advocacy Letter, AIA 2030, or MEP 2040. One piece of the AI puzzle that is coming to the forefront of the conversation is the environmental impact of the amount of computing power needed to drive these technologies. Opting to use AI tools means we're contributing to the huge energy

Left: The bar area of Infinite Labs in Louisville, CO.

Right: An attempt to recreate the same lighting effect in Midjourney with the prompt, "open daylight cool-toned bar area with arches in rear, contemporary mid-century style with modern decorative pendants."

and water needs of data centers' computing and cooling. According to *The Los Angeles Times*, "A query on the chatbot that uses artificial intelligence is estimated to require at least 10 times more electricity than a standard search on Google." In addition, many AI models are trained on data that has been manually sorted and labeled by exploited workers around the world. These are big ethical conversations to have with your leadership as you explore the use of AI and consider your overall environmental impact through other sustainable design practices and community involvement.

The decision about how to use AI as a designer requires us to call on our most human experiences. Passionate designers already use a wide variety of tools to develop and communicate their ideas. Much like during the transition from hand drafting to CAD, our industries are continually evolving. We have a responsibility to determine the benefits and risks of these tools and decide for ourselves if there is something intangible at the heart of the process that is gained or lost by using them. And we have an opportunity to share the art and humanity of design with a new generation who are growing up surrounded by AI and encourage them to understand the kind of expertise that can't be replaced by technological advancements. ©

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PROJECT IN PICTURES

Events on Tap

The Taphouse Bar and Restaurant in the historic village of Bellaghy in Northern Ireland is serving up more than just snacks like wood-fired pizza and sips including artisan gin in its new event space. Fit for all types of gatherings, the lighting inside the restaurant's expansion is equally changeable to suit the needs of various clientele. To add some flare to the taphouse's warm ambience and family friendly atmosphere, fixtures from UK-based manufacturer **Aurora Lighting** were selected for use and supplied through Electrical Wholesale Express, Magherafelt.



»
Luminaires offer color
temperatures **ranging from
2700K to 5000K.**





Staff can control **illumination color and brightness** of Bluetooth RGBXCX LED strip lights and Bluetooth RGBCX GU10 fixtures via a remote control or mobile app.



Strip lights provide at least 25,000 hours of life as well as flexibility for daytime events and nighttime gatherings that may require **warm-white light**.

Photos: Aurora

IES INSIDER

Inspiration, Passion and Perseverance

The IES Young Professionals Scholarship Fund sponsored the attendance of six lighting design students at IES24: The Lighting Conference in New York City in August. The students—either in their junior or senior year of undergraduate school or enrolled in a graduate program—were encouraged to share their conference experiences, which are included below.



Mahya Fani

Attending IES24: The Lighting Conference in New York City as a recipient of the IES Young Professional Scholarship was an incredibly rewarding experience, one that significantly shaped both my academic and professional develop-

ment. This event brought together a wide array of lighting professionals, researchers and industry experts, offering invaluable opportunities to learn, connect and grow within the lighting community.

Being awarded the scholarship was an honor that filled me with great anticipation. The conference exceeded all my expectations, starting with the Emerging Professional workshop, which fostered a welcoming and collaborative environment that allowed me to engage meaningfully with fellow attendees. Through interactive sessions, including a series of engaging games centered on lighting research, I had the chance to connect with both peers and seasoned professionals. These interactions helped me build a network of contacts that will continue to be beneficial as I move forward in my career.

One of the standout moments during the conference was our visit to the Perelman Performing Arts Center [LD+A, September 2024] with the lighting design team. This experience provided me with practical insights into the application of lighting design in the performing arts. It was an incredible opportunity to witness how lighting is used to shape and enhance artistic spaces, further deepening my appreciation and understanding of the field.

The conference's academic sessions were another highlight. I attended several presentations from leading researchers whose work resonated closely with my own. Meeting these experts in person allowed me to engage

in in-depth discussions about our shared research interests, gaining insights that have already begun to influence my work. These exchanges were invaluable, broadening my perspective on the field of lighting research and inspiring new avenues for exploration.

Additionally, I had the opportunity to interact with professionals from various industries related to lighting. These discussions broadened my understanding of potential career paths beyond academia and opened my eyes to opportunities I had not previously considered. I received practical advice on how to navigate the job market and align my research with industry trends, helping me to refine my long-term career goals.

I also delivered an oral presentation on my research "The Cognitive Impacts of Light: Investigating the Differential Effects of Momentary and Daily Exposure." Presenting my work to an audience of academics and industry leaders was both challenging and rewarding. The constructive feedback I received has not only enhanced my current research but also informed the direction of future projects.

Another key aspect of the conference was my introduction to several IES Technical Committees. These committees focus on specialized areas of lighting research and development. Being invited to connect with professionals in these groups was an exciting opportunity that could lead to potential collaborations. I am eager to explore how I can contribute to these committees in the future, further solidifying my place in the lighting community.

Attending IES24: The Lighting Conference was a transformative experience. I left the conference feeling inspired and excited about my future in the field of lighting, and I look forward to participating in future IES conferences, where I can continue to grow and contribute to this vibrant community.



Michael Lekan-Kehinde

My IES24: The Lighting Conference experience started with my acceptance as one of the 2024 Young Professional Scholarship recipients in June 2024 while in Baltimore, MD, working on my thesis-focused research on improving indoor environ-

mental quality (lighting and acoustics) in green buildings. Attending the conference was an amazing opportunity to continue to refine my knowledge and discuss my research with senior experts and colleagues in the field. The event provided a good opportunity to deepen my knowledge and appreciate projects that have demonstrated resilience, innovation and credence in lighting design, technology and implementation.

My arrival at the hotel and conference center, Marriott Marquis, Times Square, went smoothly, as I checked into my room and joined the group walking visit to Acuity's office. During the trip, I had a discussion with Kelly Roberts about her work at Primary Arc Design. This created some synergy ahead of EP Day. Also, it was great seeing so many Young Professionals like myself, who were eager to ask questions about Acuity's brands, its office and the lighting concept within its space. I was particularly interested in the Fresco brand geared toward expression of oneself through light.

My evening experience continued with a walking historical tour around New York City's prominent buildings including St. Patrick's Cathedral, Rockefeller Plaza, MoMa and AXA Equitable Center, reimagining the challenges the designers faced during their time and how they may have designed the lighting differently today if they had the opportunity to do so.

During EP Day, it was interesting listening to professionals including Peter Ngai, Cheryl English and Mark Roush, who have had remarkable careers in lighting, discuss their work and encourage EPs toward a brighter future. The *Jeopardy!* game served as an ice breaker and helped EPs connect better as a group while learning. Likewise, the interactive section with individual professionals was also enlightening, as I learned new words and concepts and was able to ask questions. The breakdown of roles including manufacturers who build products, sales representatives and distribution and business development opportunities, among others, provided valuable information about the industry.

During the third day, Amber Case sparked unique conversation around calm technology and encouraged the integration of the concept she discussed into illumination technology, especially with the embrace of AI. She referenced the book *The Coming Age of Calm Technology* in saying, "What matters is not technology itself, but its relationship to us," which is a reminder that technology should think about people. (I believe that thinking about people also means thinking about the planet, which was also discussed during several sessions.)

Finally, I was appreciative of the opportunity to participate in the Illumination Awards Gala and to see the various projects, individuals and organizations that have demonstrated unique dedication to the advancement of lighting technology. Thanks to the funding opportunities provided by the community, I look forward to using the knowledge and network availed toward the development of self and others.

Thank you, IES, volunteers, sponsors and every contributor to IES24: The Lighting Conference.



Nano Obando

In August, I had the opportunity to attend IES24: The Lighting Conference thanks to the IES Young Professionals Scholarship. Held in New York City, it was a wonderful and enriching experience. From the first moment until the end of the conference, the cordiality

and kindness of the event's organizers made participants feel comfortable throughout the event. I believe that everyone involved in the field of lighting should, at least once, attend this conference.

Participating in EP Day was a great experience. Being in a room with people from different professions—designers, architects, engineers, Ph.D. students, among others—and different countries, with different

cultures and of different ages, with whom we share the passion for lighting design, fed my knowledge not only from the technical side but also socially. One of the most exciting and fun activities was the “Game Show.” This interactive quiz allowed us to demonstrate our knowledge of lighting as we competed in teams for various prizes. The questions ranged from basic concepts to lighting design decisions. It formed a lively and competitive atmosphere that contributed to an activity we didn’t want to end.

Another fruitful activity was the networking session that provided us with a valuable opportunity to connect with lighting professionals. Here, I had the chance to talk with industry experts, share ideas and explore possible collaborations. This exchange of knowledge and experiences not only enriched my understanding of the lighting field but also strengthened my network of contacts within the industry, research and education. In particular, I found the table on research to be the most interesting because it is the field in which I operate.

The “Icons in Lighting” talks were another highlight, in particular, Peter Ngai’s presentation on how to indirectly illuminate spaces. I would also like to acknowledge the

professionals in charge of the EP Day, who, in addition to showing a broad mastery of lighting knowledge, knew how to express it in an entertaining way.

The rest of the conference activities such as the sessions, papers and the industry Progress Report expanded my knowledge on various topics related to lighting. These talks provided deep insights into the challenges and opportunities in the field while inspiring those present to think creatively about the use of light in different contexts.

In conclusion, IES24: The Lighting Conference was an enriching experience that exceeded my expectations. It allowed me to acquire new knowledge and inspired me to reflect more deeply on the role of light in our lives. The activities in which I participated—the Game Show, networking, informative talks and the IES Illumination Awards Gala, made the event both educational and inspiring.

I would like to thank the IES for making it possible for me to attend this event that will remain in my memory forever, and I hope to be able to participate again next year.



Madeline Portway

I attended IES24: The Lighting Conference in New York City this past August as a sponsored Young Professional. I wasn’t sure what to expect initially, but I was very happy and thankful with how the weekend

at the conference turned out.

The day before the conference officially started, I went to a pre-EP Day event at the Acuity Brands office. This event was open for Emerging and Young Professionals to come and meet each other before the conference, which I really valued; it made starting the next day less stressful when it came to meeting new people. It was also great to have an opportunity to tour the Acuity Brands office and see all the fixtures and luminaires that were on display in the showroom. A group of us eventually ended up on a terrace in the building overlooking the city, which was just fantastic. The weather, the company and the view felt like a great way to slowly close out the summer.

EP Day was one of my best professional opportunities. I met many practicing folks in the industry as well

as my peers, who were either still in school or new in the industry, which made me feel like I wasn’t alone in getting my career in lighting design started. The day kicked off with a *Jeopardy!*-like game where we split into teams to answer lighting industry-related questions. It was fun despite my team’s buzzer malfunctioning (which is the only reason why we could never buzz first or get any points—no other reason at all). After that, we listened to a panel of people from all over the industry talk about what their roles are within the realm of lighting. It was really interesting to learn about all the different aspects and jobs within this industry that previously I had not known existed. We had the chance to listen to some lighting legends: Peter Ngai and Cheryl English. I was surprised to hear that Peter Ngai basically created the concept and practice of indirect lighting (in modern times, of course). Indirect lighting was one of those things I learned in class that seemed like it had been around forever, so it was really cool to meet the man who patented it.

Toward the end of the day, we took a field trip to the Perelman Performing Arts Center to tour the lobby and theater. I was not sure what to expect walking up

to the building based on its exterior façade, but I was immediately blown away climbing the steps and seeing the effect the stone walls made on the interior. It gave the project an otherworldly and enchanting aura inside. On top of that, the elegant and sleek lighting used for the lobby and restaurant pulled everything together. We toured one of the theaters to see the extensive luminaire set-up around the entire theater and were given a presentation by two of the lighting designers who worked on this project; they talked about the goals and challenges of illuminating the stone façades at night to give the cube-shaped building a gentle glow.

The next day, I watched the opening keynote presentation by Amber Case, which I found very interesting. It made me stop and think about all the technology I use in my life and how it was affecting me. Afterwards, I attended a few seminars covering a range of topics. My favorite seminar was Andra Zinkon's presentation about how she lit up a unique sculpture in the downtown area of her home city; her design process and end result really emboldened me to continue on with my career path in becoming a lighting designer. The other seminars I attended were about topics I had little knowledge about. While much of the information went over my head, it only emboldened me to further continue my lighting education.

At the end of the day on Friday, I attended the Illumination Awards Gala. It was really inspiring to see these fantastic projects receive recognition for their

lighting design. I also didn't realize how international the IES really was until I saw that some projects were located in places like China, Greece and Japan. It was a fun night of celebration around these projects and with all the new people that I met. I felt like a real part of the lighting community on the dance floor that night.

I took the final day of the conference to explore New York, where I visited Manhattan and Williamsburg. While I was a little disappointed that I didn't attend the seminars and other events held that day, I was so glad I took the time to enjoy the city. Many of the EP Day organizers encouraged us to go out and explore while we were there, and Saturday was the only day I had the chance. I've only ever visited the big tourist areas of the city on a family vacation once, so I really enjoyed just walking around and discovering the smaller, everyday beauty that New York City has to offer. I attempted to ride the subway out to Williamsburg, which ended in my giving up and walking to that area instead. Next time I visit the city, I hope to figure it out and explore farther from my hotel.

Overall, this conference was an invaluable experience to me as a student in lighting design. I gained a sense of community in this industry and made so many new connections to learn from and grow. I will be forever grateful to those who funded the IES Young Professionals Scholarship, and I want to say a huge thank you to all the members on the EP Committee and the conference organizers as a whole.



Kianoush Vali

Attending IES24: The Lighting Conference in New York was an invaluable experience that offered deep insights into the lighting industry, especially for someone at the beginning of their career like myself.

The opportunity to interact with seasoned professionals, participate in discussions on the latest trends and explore various facets of lighting design has significantly broadened my understanding and appreciation of this field.

The IESNYC Section has always been supportive of Emerging Professionals, and this conference was a clear example of that. A key highlight was the guidance provided by industry veterans, referred to as "guiding lights," who shared their expertise and experiences.

This interaction helped me understand the entire project lifecycle, from the initial involvement of contractors to the challenges that arise along the way, emphasizing the importance of collaboration among designers, specifiers and contractors. Networking also played a significant role, as I had the opportunity to meet professionals who return each year to reconnect and share insights. These connections go beyond exchanging business cards; they foster relationships that can lead to collaborations, mentorship and ongoing professional growth. Being part of this community and engaging in events like this is truly an investment in my career development.

One of the talks with industry professionals that resonated with me was focused on healthcare lighting and the role it plays in patient care. The discussion emphasized the importance of designing spaces that

are not only aesthetically pleasing but also contribute positively to patient outcomes. The concept of evidence-based design in healthcare facilities was particularly intriguing. It involves using research and data to inform design decisions, ensuring that the spaces created support the health and well-being of patients. This session shed light on how lighting can impact the psychological and physiological states of individuals, which is crucial in environments like hospitals, where patients spend extended periods. I also learned that AI is set to revolutionize the lighting industry by automating processes and predicting needs, but creativity remains essential. Despite technological advances, human insight will continue to play a crucial role in design decisions.

One of the most valuable aspects of the conference was learning how research influences industry

standards. I gained insights from experts directly involved in creating these guidelines, which highlighted the importance of staying informed and actively participating in these processes. The conference wasn't just about acquiring knowledge; it also helped me step out of my comfort zone, engage in meaningful discussions, participate in workshops and fully embrace new opportunities.

Looking ahead, I am excited about the potential paths within the lighting industry that were highlighted during the conference. From healthcare lighting to circadian design, and from integrating AI to understanding the impact of lighting on human psychology, there are numerous avenues to explore. The conference has motivated me to continue learning, stay engaged with the IES community and contribute to the industry in meaningful ways.



Ryan Vanoni

This past August, I had the incredible opportunity to attend IES24: The Lighting Conference in New York City. It was an amazing experience, in which I connected with talented lighting professionals and gained insights from industry experts from

around the world.

My conference experience began on Wednesday evening at the pre-EP day event hosted by Acuity. We networked with Acuity employees and members of the EP Committee. One of the committee members was Mark Roush, the original lighting designer for the Acuity office. It was fascinating to hear his insights about the design and understand the importance of lighting in the space.

The next day was EP Day, which was easily my favorite part of the conference. The morning started with a game, which was a fun way to learn about lighting while connecting with my fellow EPs. Following this was a networking event. Among the many great people that I met, connecting with Lisa Reed stood out. It was wonderful to talk to someone who not only attended the University of Kansas (as I do) but also transitioned from an architectural engineering background to lighting design. Hearing her insights about this transition was invaluable. A recurring theme throughout the event

was how tight-knit the lighting community is, and how once you're in, it's a hard industry to leave.

EP Day also included an Icons in Lighting event, where I heard from Cheryl English and Peter Ngai about their inspiring experiences in the lighting industry. A major talking point of theirs that stuck with me was the emphasis on embracing new opportunities. They stressed how this willingness often led to remarkable experiences and growth in their careers.

We then toured the Perelman Performing Arts Center. I had seen pictures of the project prior to visiting, but being able to witness it in person was awe-inspiring. Hearing from the lighting designers about their design process and the challenges with the project that they overcame was fascinating.

The night ended with an EP reception, where I spoke with various seasoned lighting professionals who offered valuable advice on succeeding as a lighting designer. Amanda Fentress, Sara Schonour and Shoshanna Segal provided me with guidance on various questions I had and shared advice on succeeding in the field.

During the other days of the conference, I attended a variety of sessions covering topics from emerging lighting technologies to using AI to speed up the design process. It was enlightening to gain insights from experts on topics with which I had limited experience.

Overall, attending IES24: The Lighting Conference

was an awesome experience. I feel very fortunate to have had this opportunity and am deeply thankful to the Young Professionals Committee for making it possible. The knowledge and connections I've gained are truly invaluable. There were so many wonderful people I was able to meet and amazing experiences I enjoyed.

This conference not only broadened my understanding of lighting but also reinforced the importance of mentorship and community in our field. I look forward to applying what I've learned and staying connected with the incredible professionals I met.



Leanne Walters

IES24: The Lighting Conference in New York City is the first major conference that I have had the pleasure of attending since I began my academic journey in architectural engineering. The experience was both enlightening and humbling to me as a newcomer to the industry. The various panels and events held for the Young Professionals allowed me to meet many seasoned practitioners and gain insight into how those who have been in the industry for many years can create spaces in which people enjoy existing. The time that I was able to spend with

industry professionals and product manufacturers has pushed me to keep learning as much as I can about lighting and the components that go into every design. Learning about these mentors and gaining them as resources to reach out to if I have questions in the future—as well as seeing my peers and their respective accomplishments—has been a great honor. There are numerous things left for me to learn, but the conference has made me feel that the lighting field is not just a place to provide illumination, but it's also where we can appreciate what designers do for people and the spaces where they reside. Thank you to the IES for granting me the opportunity to enjoy this conference, and I look forward to participating in future events.

MEMBER MENTIONS



Amanda Arikol has been promoted to associate principal of Tillotson Design Associates.



Michael Evenson has been promoted to principal design engineer at **Acuity Brands**.



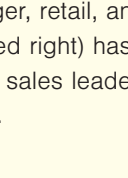
Liza Perritt has been promoted to customer care manager at **The Lighting Group**.



Carla Bukalski has joined Reed Burkett Lighting Design as principal of Strategy and Operations.



CJ Billera (pictured left) has been promoted to national



sales manager, retail, and Claudia Jean (pictured right) has been promoted to sales leader **Lutron Electronics**.

Bold + Individual or Sustaining Member



Brennan Schumacher has been promoted to principal/lighting practice lead at Mazzetti.

Peachy Keen

More than 900 attendees gathered in Atlanta for the 2024 IES Street & Area Lighting Conference in September. The event, held at the Atlanta Marriott Marquis, included educational sessions, an exhibit floor, networking events, and Casino Night. The following images are some of the highlights of the event.





"THE BIG EASY"

New Orleans will serve as the host of the 2025 Street & Area Lighting Conference from September 21 to 24, 2025.

LD+A

LIGHTING DESIGN and APPLICATION

Share Your Voice

The flagship publication of the Illuminating Engineering Society, *LD+A* is an award-winning magazine for professionals involved in the art, science, study, manufacture, teaching and implementation of lighting. In an effort to continue to provide diverse voices in *LD+A*, we are looking for lighting designers who are interested in telling their stories, including work on unique lighting projects, their experiences in the profession, and opinions on current hot topics in the world of illumination.



EVERY ISSUE of *LD+A* includes feature articles on design projects, technical articles on the science of illumination, new product developments, industry trends, news of the Illuminating Engineering Society, and vital information about the illuminating profession.



EACH MONTHLY issue features a unique theme such as sustainable design, retail lighting, roadway lighting, industrial lighting, hospitality lighting, or office and commercial lighting.



ROTATING COLUMNS cover topics including energy, green design, career issues, technology, regulations and legislation, research, and education—written by a veritable who's who of industry experts.

If you are interested in publishing an article in *LD+A*, please reach out to Editor-in-Chief Craig Causer at c.causer@ies.org to discuss further.



IES® SUSTAINING MEMBERS

The following companies have elected to support the Society as Sustaining Members, which allows the IES to fund programs that benefit all segments of membership and pursue new endeavors, including education projects, lighting research and recommended practices.*

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GE Lighting, a Savant Company
H.E. Williams, Inc.
Hapco
HP Engineering
iGuzzini Lighting USA
IMEG Corp
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L Design Studio, LLC
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Lighting Services, Inc.
LMPG
LSI Industries, Inc.
LumenWerx, Inc.
Ministère des Transports du Québec
Pharos Architectural Controls
RAB Lighting, Inc.
Radiant Vision Systems

Reveal Design Group
Spitzer Lighting
Targetti USA, Inc.
Tresco Lighting
Visa Lighting
Zumtobel Lighting

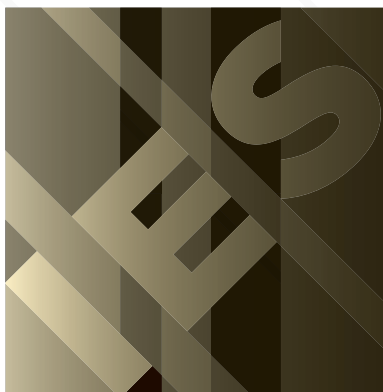
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THE IES WELCOMES THESE NEW SUSTAINING AND UNIVERSITY MEMBERS


- ALUZ
- Sazan Group

Whether you are a manufacturer, utility company, distributor, sales agency, engineering firm, architectural firm or any other professional or technical business that engages with lighting, each organization can pick and choose levels of benefits and discounts for their company employees directly—and in certain cases, non-employees’ partners, as well—furthering the reach to a larger group of professionals. The complete new Sustaining Membership structure (including the tax deduction levels) is listed at: www.ies.org/membership/ies-sustaining-membership.


Education institutions that have dedicated lighting programs as well as those higher learning institutions that focus on “lighting” in their curriculums qualify for the University Membership. For more information on program benefits go to: www.ies.org/membership/ies-university-membership.




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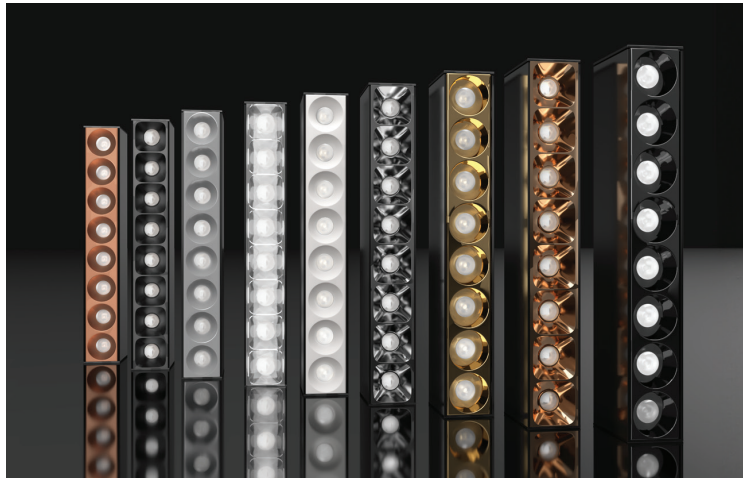


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PRODUCTS



1.



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3.



4.

1. Axis Lighting unveils MikroLite Sculpt and Stencil MikroLite for greater design flexibility, scalability and diversity. Available in nine finishes, Sculpt MikroLite comes in three baffle shapes and offers four beam angles, runs of 1-cell increments and 90-deg continuous cell corners, while Stencil MikroLite can be configured in continuous runs with 12-cell increments or preconfigured layouts. www.axislighting.com

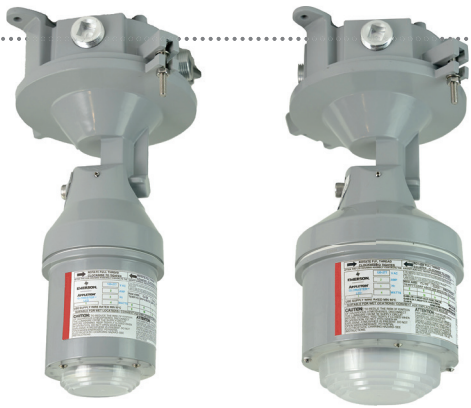
2. LightArt launches Acoustic Collection Wood Textures. Inspired by natural patterns found in wood and created using water-based ink and a high-resolution printer to

achieve wood-like details on Sola Felt materials, the collection offers four new colorways: Caramel Oak, Iron Oak, Rich Bamboo and Walnut, which can now be specified across LightArt's entire range of acoustic fixtures. www.lightart.com

3. Instrument Systems GmbH introduces PD 100 photodiodes. The devices are designed for fast and accurate measurement of radiant flux in VIS to near-IR spectra region, pulsed light sources and low-light test objects in laboratory and production applications when paired with a three-port ISP silicon integrating sphere and CAS spectroradiometer. www.instrumentsystems.com

4. Original BTC has announced the Christie light is now available as a wall light. Designed for homes and hospitality spaces in urban and rural landscapes, fixtures feature natural forms found in nature, such as that of waves and seashells. The fluted bone-china shade appears crisp white when lamps are turned Off and allows for warm ambient illumination when turned On. www.originalbtc.com

5. Emerson debuts the Appleton Glomaster LED Series of hazardous location jelly jar vapor-tight luminaires. With field-selectable CCT and lumen output, fixtures offer up to 5000K and either 2,000 or 5,000 nominal



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6.

lumens, depending on the model, as well as the ability to be pendent, wall or ceiling mounted. Jelly jars are built to endure prolonged exposure to harsh environments indoors and outdoors including corrosive chemicals, salt spray, high-pressure water jets and temperatures ranging from -40 to 131 deg Fahrenheit.

www.emerson.com

6. Birchwood Lighting, a Leviton Company, introduces the BW165 Recessed to the BW165 family. With a range of installation options from recessed to 90-deg corners and T-Grid, linear fixtures are offered in flanged and flangeless trims and multiple lenses including asymmetrical and frosted white. Luminaires have a less than-2-in. profile and are designed with a flip-down service tray that allows for easy driver access.

www.birchwoodlighting.com

SPOTLIGHT Yellow Goat Design



Yellow Goat Design introduces Poinciana. Inspired by the bright flower of the same name, the statement piece is designed for luxury residencies, commercial spaces and hospitality complexes. Made with six units of two digitally printed, heat-formed acrylic panels illuminated with directional LEDs mounted on a metal tube, the ceiling-suspended luminaire is fully dimmable and ready for customizable colorways.

www.yellowgoatdesign.com

PRODUCTS

7. Tracy Glover unveils the Rain Chandelier. Designed to resemble a shower of falling raindrops, the statement piece is made of illuminated and unlit 12-in. long, 2.25-in. wide hand-blown glass cylinders in multi-colored ombre patterns. Both UL and cUL listed, the luminaire uses 2.5-W dimmable LED bulbs and is customizable: the color and number of cylinders can be chosen by end users, and the canopy is offered in multiple sizes of round, square and rectangular shapes.
www.tracygloverstudio.com

8. Vode releases Wedge, a linear fixture in Peak (pictured) and Slope shapes for healthcare, hallway and more applications. With the ability to stand out as visual statement or seamlessly integrate as a faux-cove into the architecture of a space, Wedge Peak delivers up to 2,005 lumens per ft at high output, and Wedge Slope delivers up to 1,495 per ft at high output. Both versions are available with clear and frosted lenses.
www.vode.com

9. LEDtronics announces another rugged tunable LED wall pack to add to its collection of energy-efficient area and security lighting. The WWL14J-3050W-3050-101D model is UL certified and IP65 rated for wet locations and performs in temperatures ranging from -40 to 122 deg Fahrenheit. Dimmable fixtures in die-cast aluminum housing offer CCT options of 3000K, 4000K and 5000K and can be mounted on walls, ceilings and floors, but are ideally used with mounting heights below 15 ft.
www.LEDtronics.com



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10. Proluxe by American Lighting debuts the ChromaDMX Downlight, offering “1 trillion color combinations.” Designed for new-construction residential applications, fixtures allow for the customization of any room through user-friendly touch and voice command; fixtures are available with circular, mud-in and square trims. www.proluxelighting.com



11.

11. Meljac, a French manufacturer of light switches, announces a series of brass reading lamps in several formats to match the company's light switches. End users can adjust the 1.4-W reading lamps via a flexible arm for glare-free illumination. Fixtures are available in 29 finishes and can be customized with engraved or screen-printed words and symbols. www.meljac.com/en/

WE BELIEVE

At the Illuminating Engineering Society, everything we do is meant to advocate, engage, and educate the public about the impact of light on human life. Join us on our journey as we share how our beliefs guide us in our mission to *improve life through quality of light*.

Learn more about what we believe...visit ies.org/believe.



Illuminating
ENGINEERING SOCIETY

The companies listed below would like to tell you more about their products and services. To learn more, access the websites listed here.

AD INDEX

COMPANY	WEBSITE	PAGE #	ADVERTISING OFFICES
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Dali Alliance	www.dali-alliance.org	21	
Elemental LED	www.elementalled.com	1	NORTHEAST/ MID-ATLANTIC/WEST Amy Blackmore SAGE Publications 2455 Teller Road Thousand Oaks, CA 91320 C 805.559.1065 Amy.blackmore@sagepub.com States serviced: AK, AZ, CA, CO, CT, DE, HI, ID, MA, MD, ME, MT, NC, NH, NJ, NM, NV, NY, OR, PA, RI, UT, VA, VT, WA, WY, Washington, D.C. and Western Canada
Green Creative	www.greencreative.com	7	
Insight Lighting	www.insightlighting.com	Cover 4	SOUTH/MIDWEST/ INTERNATIONAL (OUTSIDE U.S. & CANADA) Bill Middleton Middleton Media 4513 Dartmoor Drive Marietta, GA 30067 T 770.973.9190 C 404.394.7026 midmedia@aol.com States serviced: AL, AR, FL, GA, IA, IL, IN, KS, KY, LA, MI, MN, MO, MS, ND, NE, OH, OK, SC, SD, TN, TX, WI, WV and Eastern Canada
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Quanta Light	www.quantalight.com	23	
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The name is Bond. James Bond. Okay, not quite—the name is the Old War Office (OWO)—which served as the headquarters for English statesmen like Winston Churchill and the inspiration for author Ian Fleming’s iconic James Bond novels—now, it’s living in its second iteration. The OWO transformed like a spy in disguise to host all that comes with luxury—Residence by Raffles: a 27,000-sq ft spa, 120 hotel rooms, 85 residences, nine restaurants and three bars. Lighting design firm dpa’s mission for the project was to come up with sophisticated and bold illumination to match the Raffles brand. To get the job done, they called in help from Lucent Lighting’s portfolio of cutting-edge products.

Photo: Raffles London at The OWO

LAST LOOK

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is Living Twice

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Introducing the new IES Standards Toolbox, featuring resources and tools that support your efforts to enhance your lighting knowledge, work more efficiently and stay updated on the very latest lighting standards and guidelines.



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