VIDEO

Amerlux - Commercial Lighting Manufacturer | SPEC-Grade Lighting

Amerlux, a wholly-owned subsidiary of Delta Electronics, has been a catalyst for change in the lighting industry since 1984—simply by listening to the marketplace.

We don't keep up with industry trends. We set them.

We believe lighting is as much about "feeling" as it is about "seeing." Our solutions deliver the five elements that exceed today's expectations: rich color, next-level comfort, total control, easy configurability and "capture" to provide added security.

We believe in building long-term relations with all our stakeholders, including architects, lighting designers, facility managers and contractors. We understand your goals and problems, then rise to the challenge by offering an array of the most magnificent, top-end lighting solutions in the world—backed by iron-clad guarantees, breathtaking savings and unparalleled service—at a cost-effective price.

Our award-winning portfolio includes innovative interior and exterior lighting products that deliver striking aesthetics, unmatched rendering and superior performance through advanced engineering and connectivity.

Our clients' business is our business, their reputation, our reputation, and their bright future, our own.

National LED Market Observer

1. **Department of Energy Begins Incandescent Bulb Crackdown** - After years of political battles and months of warnings, the Department of Energy has decided the time has come to fine manufacturers, distributors, and retailers for selling incandescent bulbs that do not meet the minimum efficacy standard of 45 lumens per watt. On April 26th of this year, the Department of Energy released a new statement, explaining that it will begin its enforcement of General Service Lamp standards. The fines could become significant, stating, "Any person who knowingly violates any provision of may be subject to assessment of a civil penalty of no more than $542 for each violation....." The April 26th statement did include the warning that it would begin the enforcement in July of 2023. Department of Energy Begins Incandescent Bulb Crackdown – lightED (lightedmag.com)

2. **Are Compact Fluorescent Lightbulbs Being Banned?** - With the sale of incandescent lightbulbs effectively banned in the US, compact fluorescent lightbulbs, or CFLs, are next on the chopping block. Though CFLs use far less energy than incandescent bulbs, they aren't as efficient as LEDs. In 2022, the US Department of Energy proposed guidelines that would more than double minimum lightbulb efficiency standards, from 45 lumens per watt to more than 120. That would effectively end the sale of CFLs, which generally max out at 70 lumens per watt. Vermont's ban on the sale of CFLs already took effect in February 2023. California is scheduled to take effect on Jan. 1, 2024. Lawmakers in Colorado, Hawaii, Illinois, Maine, Maryland, Massachusetts, Nevada, New Mexico, Oregon, Rhode Island and Washington State are also considering CFL bans. Are Compact Fluorescent Lightbulbs Being Banned? - CNET

3. **Policymakers Renew Rallying Cry for Fluorescent Lamp Phase-Out** - The transition to cleaner lighting is well underway. The decision taken by 137 Parties at Minamata COP4, to phase out compact fluorescents by 2025, attests to this, and it will avoid 261.5 million metric tons of CO2 emissions and 26.2 metric tons of mercury pollution from 2025 to 2050, according to experts on clean lighting. On April 28, 2023, the Africa Region — represented by 40 countries — has taken the lead again to propose a new amendment to the Minamata Convention to be discussed at the upcoming fifth Conference of Parties (COP5) this year in Geneva. This amendment aims to end exemptions for all major categories of mercury-containing lighting. LED alternatives remain widely available around the globe, with solutions to cost effectively meet nearly every need. LAST WORD | Policymakers renew rallying cry for fluorescent lamp phase-out | LEDs Magazine

4. **The Growing List of State-Wide Fluorescent Bans** - Maine is set to become (by our count) the sixth US state to implement a ban on most fluorescent lamps, following the path set by **Vermont, California, Colorado, Hawaii** and **Rhode Island**. The law, titled "An Act to Reduce Mercury in the Environment by Phasing Out Certain Fluorescent Light Bulbs," will become effective on January 1, 2026. The ban targets two types of mercury-containing lamps: compact fluorescent mercury-added lamps and linear fluorescent mercury-added lamps. The ban, however, exempts certain lamps designed for specific uses. The Growing List of State-Wide Fluorescent Bans (inside.lighting)

5. **Five More States Are Phasing Out Fluorescent Bulbs** - Families and businesses in Hawaii, Colorado, Oregon, Rhode Island, and Maine will save $2 billion in utility bills by 2050 and have reduced risk of mercury exposure, thanks to new laws that phase out the sale of common fluorescent light bulbs. Each of the laws has been enacted since the beginning of June. The states join California and Vermont, which enacted their own "clean lighting" laws last year. Five More States Are Phasing Out Fluorescent Bulbs | EC&M (ecmweb.com)

6. **How AI Facilitates Indoor Agriculture Efficiencies** - Modern greenhouse growers require operational flexibility to address market factors such as the growing demand for local food, labor shortages, and expenses related to energy and fertilizer. However, the current market-dominant lighting systems provide growers little flexibility for evolving conditions once installed, thus embedding limitations. By harnessing artificial intelligence (AI), horticultural lighting suppliers can challenge this paradigm, providing smart LED solutions that are modular, resilient, and future-proof. Systems leveraging AI, such as Sollum's SUN as a Service (SUNaaS), allow growers to adapt to changes such as introducing new crops, increasing yield and quality, environmental conditions, resource constraints, and business development objectives. INDUSTRY INSIGHTS | How AI facilitates indoor agriculture efficiencies | LEDs Magazine

7. **NAM: New EPA Regulations Could Harm Infrastructure Investment** - A new report conducted by Oxford Economics and commissioned by the NAM warns that the EPA's proposed air quality regulations for PM2.5 could threaten $162.4 billion to $197.4 billion of economic activity and put 852,100 to 973,900 jobs at risk, both directly from manufacturing and indirectly from supply chain spending. In addition, growth in restricted areas may be constrained, limiting investment and expansion over the coming years. NAM: New EPA Regulations Could Harm Infrastructure Investment – tEDmag

8. **DOE Opens Up $8.5B to States, Territories for Home Efficiency, Electrification Rebate Programs** - The $8.5 billion will be available through two programs targeting beneficial electrification and energy efficiency upgrades. DOE said its Home Efficiency Rebates Program will offer $4.3 billion in formula grants to state energy offices to reduce the upfront cost of whole-home energy efficiency upgrades in single-family and multi-family homes. And a Home Electrification and Appliance Rebates Program will offer almost $4.28 billion to reduce the upfront cost of efficient electric technologies in single-family and multi-family homes. An ACEEE policy brief details upgrades and appliances that can qualify for rebates, including: heat pumps, heat pump water heaters, insulation and air sealing, electric panel upgrades, efficient stoves and other uses. DOE opens up $8.5B to states, territories for home efficiency, electrification rebate programs | Utility Dive

9. **DOE Recognizes 14 Partners for Excellence in Commercial Lighting Systems** - The U.S. Department of Energy's (DOE's) 2023 Integrated Lighting Campaign (ILC) recognized 11 organizations for exemplary commitment to energy efficiency and environmental responsibility in their buildings, and 3 organizations for exhibiting exemplary support and advocacy for this work. Partners were recognized on August 5 at the Illuminating Engineering Society (IES) annual conference for projects that showcase how lighting system upgrades can lead to significant energy savings and create more comfortable, productive, and environmentally responsible spaces. List at: 2023 Recognitions | Integrated Lighting Campaign (energy.gov)

10. **Meet DOE's Newest Research Projects from BENEFIT 22-23** - On August 7, 2023, DOE released $46 million in funding for 29 projects across 15 states to develop advanced technologies and retrofit practices for buildings that will benefit occupants and the grid through efficient, affordable, sustainable, and resilient building operation. Advancements made with this funding from the Buildings Energy Efficiency Frontiers & Innovation Technologies (BENEFIT) funding opportunity will help buildings electrify while improving their energy efficiency and demand flexibility in a cost-effective and equitable manner. BTO's newest cohort of projects at: Meet DOE's Newest Research Projects from BENEFIT 22-23 | Department of Energy

11. **IRS Releases Section 25C Tax Credit Qualification Requirements for Home Energy Audits** - On August 4, 2023, the U.S. Internal Review Service (IRS) released IRS Notice 2023-59, which specifies requirements for U.S. taxpayers to claim the "Energy Efficient Home Improvement Credit" under section 25C of the U.S. tax code for home energy audits. The section 25C Energy Efficient Home Improvement Credit provides taxpayers with financial incentives that make home energy upgrades more affordable and effective. Taxpayers must follow the requirements set forth in IRS Notice 2023-59 at: IRS Releases Section 25C Tax Credit Qualification Requirements for Home Energy Audits | Department of Energy

12. **2023's Largest Electrical Distributors** - Despite concerns over a recession, most of 2023's Top 150 distributors expect to power through the uncertain economic climate and log increased revenues this year. While they live in different parts of the electrical market, electrical contractors and their suppliers have dealt with similar challenges over the past few years. For some companies, price increases due to inflation accounted for a major portion of revenue increase. Lead times were a challenge..... Other major concerns included the impact of remote officing on demand for new office construction and/or office retrofit work; price increases; the impact of the regional banking instability on the commercial real estate market; and rising interest rates. 2023's Largest Electrical Distributors | EC&M (ecmweb.com)

13. **The Rise of DC Microgrids** - A century ago, the "War of the Currents" between AC and DC appeared firmly settled on the side of AC power distribution. Today, the power transmission debate has begun to shift. An increased focus on renewable energy has led to proliferation of on-site DC power sources. The growing popularity of solid-state lighting, electric vehicles (EVs), and the Internet of Things (IoT) has caused the number of DC loads to skyrocket. A DC microgrid approach has potential to increase efficiency, remove points of failure, simplify electrical wiring, lower cost, and boost resiliency. Best of all, it provides new opportunities for the LED ecosystem. ENERGY EFFICIENCY | The rise of DC microgrids | LEDs Magazine

14. **RESEARCH: Enhancing Crop Growth with Intra-Canopy LED Lighting** - This study explores the use of intra-canopy LED lighting to enhance crop growth and yield in greenhouse cultivation. The research validates a functional structural plant model (FSPM) to estimate light absorption at leaf level. The findings reveal that combined intra-canopy and top lighting yield the most uniform light absorption. The study also indicates that intra-canopy lighting results in 8% higher total light absorption than top lighting, and combining 50% intra-canopy lighting with 50% top lighting increases light absorption by 4%. The research suggests that both total light absorption and light distribution should be considered when positioning LED lamps to illuminate a canopy. Enhancing Crop Growth with Intra-Canopy LED Lighting: A New Approach to Greenhouse Cultivation — LED professional - LED Lighting Technology, Application Magazine (led-professional.com)

15. **RESEARCH: LED Drivers Market to Surpass USD 28 Billion by 2030** - As per the SNS Insider report, "The LED Drivers Market had a valuation of approximately $6.18 billion in 2022. Forecasts indicate a projected surge to about $28.78 billion by 2030, with a remarkable compound annual growth rate (CAGR) of 21.2% during the forecast span from 2023 to 2030". LED drivers enable dimming and control systems, empowering users to fine-tune lighting as per their requirements. From cozy residential settings to expansive commercial installations, this precision is a game-changer. The evolution of LED drivers is intrinsically tied to the advancement of LED technology. Dimming capabilities, compatibility with smart home systems, and integration with Internet of Things (IoT) networks are some avenues being explored. LED Drivers Market to Surpass USD 28 Billion by 2030 – lightED (lightedmag.com) Download Free PDF Sample Report: https://www.snsinsider.com/sample-request/2644

16. **Apple Will Make All Carmakers Drool Over MicroLED Displays** - Apple Car could be one of the first models to adopt microLED, as the Cupertino-based iPhone maker plans to bring the technology to several products, including the electric vehicle due in 2025 or 2026. The debut of Apple's first car is expected to be a turning point in the automotive industry, as the technology company would turn from friend to foe for traditional carmakers. 2026 could be the year when Apple expands the use of microLED technology to more products, "including headsets, smartphones, and automotive applications." Once microLED makes its way to the Apple Car, the rest of the automotive industry could follow suit and bring the same technology to future models. The technology allows for reduced power consumption and increased brightness and reliability. Apple could pioneer the debut of microLED displays in the car world if its release date stays on track. Apple Will Make All Carmakers Drool Over MicroLED Displays - LEDinside

17. **TRAINING: Lighting Controls Association Announces New Course in 2021 IECC by Craig DiLouie** - Commercial building energy codes regulate the designed energy efficiency of nonresidential buildings to minimize energy consumption. The majority of U.S. states adopt model codes such as the International Energy Conservation Code (IECC) produced by the International Code Council. The 2021 version of the IECC contains robust, detailed, mandatory requirements covering a broad range of energy-saving lighting control strategies. Education Express provides in-depth education about lighting controls technology, application, energy codes, system design, and commissioning. For more information about Lighting Controls Association's Education Express, visit the LCA web site at www.LightingControlsAssociation.org

18. **Colorado Adopts Its First Building Energy Performance Standard** - Colorado's Air Quality Control Commission adopted building energy performance standards Aug. 17 aimed at decreasing operational carbon and associated greenhouse gas emissions in most buildings 50,000 sq ft or bigger. The goal of Regulation 28, set by a 2021 state law, is to cut qualifying buildings' GHG emissions by 7% by 2026 and 20% by 2030, compared against 2021 levels. The rule applies to about 8,000 buildings, many of which might need energy retrofits. Colorado Adopts Its First Building Energy Performance Standard | Engineering News-Record (enr.com)

19. **DLC WEBINAR: Economic Potential of Networked Lighting Controls** - A DesignLights Consortium (DLC) study published today underscores the energy savings potential of networked lighting controls (NLCs) and recommends revising energy efficiency incentive models to capture the full benefits of controlled lighting. A summary of the study, which emphasizes the value of pairing NLCs with HVAC systems in large commercial buildings, is posted on the DLC website. The DLC will discuss details of the study entitled "Economic Potential of Networked Lighting Controls in Commercial Buildings: Tapping the Added Value of HVAC Connections", including methodology and findings, during a September 6 webinar.

20. **MDM WEBCAST: The Marketplace Opportunity Facing Distributors in 2023** - B2B marketplace industry is expected to reach $3.6 trillion in sales by 2024, up from $680 billion in 2018, highlighting the growing importance of different types of marketplaces. This webcast will cover:

- The current state of online marketplaces within distribution
- How to know when and if launching an online marketplace is right for your organization
- Marketplace, drop ship, or hybrid; factors to consider when formulating a marketplace strategy
- Actionable advice from marketplace leaders succeeding in the distribution space

This webcast will take place on September 7 at 1pm ET. Register to join here.

21. **Inflation Takes a Bite Out of Biden's Infrastructure Ambitions** - President Joe Biden's ambitions for his $1.2 billion infrastructure bill may not come to fruition as big-ticket infrastructure projects across the nation fall victim to the rising cost of construction materials, dislocated supply chains and labor shortages. The challenges raise questions over whether the projects will be able to deliver sufficient value for taxpayers given that construction costs have soared by as much as 70% since early 2020. All those constraints come as state and local officials start to make plans for how to spend a windfall of federal dollars set to come their way. Inflation takes a bite out of Biden's infrastructure ambitions (nbcnews.com)

22. **New White House Buy America Guidance Draws Scrutiny** - The White House has issued final guidance that aims to help federal agencies carry out the Infrastructure Investment and Jobs Act-mandated Buy America program, which seeks to expand the use of domestic preferences in federally funded infrastructure projects. Construction and transportation industry officials say that implementing the new guidance will pose challenges, for example, in getting materials certified as adhering to the Buy America requirements. View a White House/OMB summary of guidance here.
White House Outlines New Buy America Guidance | Engineering News-Record (enr.com)

23. **How Many Did Business with Tom Ciurczak?** - Well I sure did when he was in the lighting industry, the Specialty Lighting industry: Osram, Ushio and his own company, BLC International. That's history....time for a sea change. Throughout his business career, he continued to hear the siren's song as songwriting provided the creative outlet in his life. Now Southern California singer/songwriter Tom Ciurczak offers up an infectious blend of energetic rhythms, danceable beats and powerful storytelling lyrics that make you think you are listening to a crossbreed of Bruce Springsteen, Warren Zevon and Steve Earle, complete with Eagles-esque harmonies and hook-laden Eric Clapton style guitar work. Tom is fully-committed to life on the road as he regularly performs at music venues throughout the Southland to promote his own brand of Heartland Rock. His new Album "I Ain't Ever Growing Up Volume I" dropped Friday Aug 4th. All the best Tom! Give a listen: The Bandcamp Diaries. - Tom Ciurczak's "I Ain't Ever Growing Up": A...

24. **SPIE Optics + Photonics 2023 Conference on 3D Printing for Lighting** - In August, the Lighting Research Center (LRC) at Rensselaer Polytechnic Institute will kick off the first conference to explore the opportunities and challenges of 3D printing for the lighting industry. The conference will set the stage for discussions about the future of 3D printing for lighting components and systems through more than 30 research and state-of-the-technology presentations, as well as discussion and networking events. The 3D Printing for Lighting conference, to be held as part of SPIE Optics + Photonics 2023, the leading multidisciplinary optical sciences and technology meeting, will take place **August 22-23, 2023, at the San Diego Convention Center**. https://www.lrc.rpi.edu/programs/solidstate/news/SPIEEvents.asp

25. **VIDEO: Selling LLLC for Retrofits** - Learn more about the resources available when using LLLCs in your next project. By now, you've probably heard of Luminaire Level Lighting Controls (LLLC). If you haven't, LLLC is a type of networked lighting control system, which integrates both sensors and load controllers into each fixture, providing unparalleled flexibility, control, and deep energy savings. Whether you're ready to dive into LLLC for an upcoming project, or just want to learn more, the Northwest Energy Efficiency Alliance (NEEA)'s educational resource for commercial building professionals, BetterBricks, has recently added some helpful video trainings to their educational offerings. These video trainings will help you understand and sell the benefits of LLLC and better utilize the Design Lights Consortium (DLC) tools to find the right system for your project. You can watch the video course at: https://www.youtube.com/watch?v=IyXuupY2y2g

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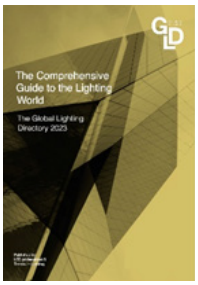
Global LED Energy Market Observer:



26. **RESEARCH: The Comprehensive Guide to the Lighting World** - The Global Lighting Directory (GLD) is a professional and comprehensive information source covering the entire value chain in the light/lighting domain. A unique categorization system assists in finding and selecting the most relevant businesses. GLD covers the full value chain in lighting on the topics of Lighting Designers, Lighting System / Service Manufacturers and Distributors, Lighting Components / Modules / Equipment / Service Distributors & Manufacturers, Lighting Organisations, Lighting Events and Lighting Research. The GLD addresses more than 60,000 experts in the fields of Architecture, Lighting, Design and Industry. Free registration on www.GLD.lighting info@GLD.lighting

27. **Is India the Next Semiconductor and Electronics Manufacturing Hub?** - Many electronics companies have been pushing to manufacture locally – including the robust mobile and electric vehicle (EV) markets. This includes manufacturing for the short term and developing newer products locally. This means more electronic companies have been setting up R&D centers alongside manufacturing sites to boost future developed products. Through government incentive programs, and with geopolitical tensions between the US and China still relatively high, more and more companies are looking to diversify their production locations, India becoming a popular choice for some. India is highly competent not just on the hardware side but also on the software, thus allowing for this rapidly growing Indian ecosystem. Is_India_the_next_semiconductor_A1_ES4.625ee22adc552.pdf (baseplatform.io)

28. **RESEARCH: Ambient Lighting Market Size, Share, and Segmentation** - The SNS Insider Report shows that the Ambient Lighting Market size was valued at USD 68.5 billion in 2022 and is expected to grow to USD 135.49 billion by 2030 and grow at a CAGR of 8.9 % over the forecast period of 2023-2030. Ambient light is frequently regarded as the starting point for a space or room. It determines how much light is present in a room's centre. It serves as the starting point for designers, engineers, and contractors when determining the ideal method of lighting a space. It can originate from table and floor lamps, recessed downlights mounted on the ceiling, and ceiling lights mounted on the ceiling itself. Ambient Lighting Market Size, Share & Growth Report 2030 (snsinsider.com)

29. **Philips Horticulture Collaborates with Siemens and 80 Acres Farms** - Signify announces a collaboration between Philips Horticulture LED Solutions, 80 Acres Farms, and Siemens for the global scale-up of vertical farming. Philips Horticulture LED Solutions' collaboration with 80 Acres Farms began in 2017.With headquarters in Ohio, 80 Acres Farms is one of the pioneers in vertical farming and one of the first companies to master the art of scale-up. The joint development with Siemens, a leading technology company and supplier of automation and industrial software, will enable rapid global scale-up for 80 Acres Farms. With knowledge and experience gained from a great diversity of industries, the Siemens' Xcelerator open data platform will provide the required technology and ecosystem for digitization, automation, and standardization throughout the whole supply chain. Philips Horticulture Collaborates With Siemens and 80 Acres Farms – lightED (lightedmag.com)

30. **LED Lighting Supports Australia's Net-Zero Ambitions** - Australia's coal industry plays an outsized role in the economy, employing 46,000 people and generating over 50% of the country's electricity. The country is now dealing with the effects of this fossil fuel. On the positive side, Australia is ahead of much of the world in the transition to a net-zero economy. Making lighting more energy-efficient should definitely be part of the answer. According to our own research, roughly 50% of all light points in Australia are energy-inefficient incandescent and fluorescent. Shifting all conventional light points in Australia to connected LED could save up to AUS$8.1 billion each year. LED lighting supports Australia's net-zero ambitions - LEDinside

31. **Decarbonization Requires Faster Pace of Retrofits by Craig DiLouie** - The 2016 Paris Agreement called for its nearly 200 signatories to join in limiting global warming to an increase of 1.5 degrees Celsius above pre-industrial levels. This would require carbon emissions to be reduced by about half by 2030 and reach net zero by 2050. To reach this goal, the rate of retrofits in the Global North will need to triple from barely 1 percent to at least 3 percent of stock each year, according to Retrofitting Buildings to be Future-Fit, a November 2022 report by commercial real estate services firm Jones Lang LaSalle (JLL). Buildings are responsible for an estimated 39 percent of global energy-related carbon emissions. Lighting and controls can play a significant part in the transition. The report specifically called out LED luminaires, detailed deployment of sensors, and digital controls that generate data that in turn can be leveraged for energy management, reporting, and to optimize occupant comfort. Decarbonization Requires Faster Pace of Retrofits (lightingcontrolsassociation.org)

Monthly Feature:

How Can AI Rewrite the Lighting Controls Value Proposition by Landon Miles - The history of the lighting industry is a testament to an unyielding spirit of innovation. From the ingenuity that launched the incandescent lightbulb to the vision realized in energy-efficient LEDs, the lighting and controls sector has consistently sought to improve human experience and reach new levels of sustainability. Today, we stand on the precipice of another leap forward, with artificial intelligence promising to propel the next evolution of lighting functionality and controllability. However, we cannot build a roadmap for AI without understanding what it truly is and the role it can play in adding more value to lighting technology and the built environment it serves.

Before we delve into discussing the applications of AI in lighting control systems, it is essential to know the fundamentals of AI. Artificial intelligence refers to the simulation of human intelligence in machines by a range of processes, including learning, reasoning, and self-correction, that enable computers and other devices to replicate human cognitive abilities. Through these processes, AI systems can adapt and improve their performance over time, thus becoming more effective and efficient at solving problems and executing tasks. It is important to distinguish between AI as it exists and its fictional portrayals often seen in popular media. Fictional characters such as "The Terminator" or Star Wars' C-3PO tend to depict AI as self-aware or conscious machines, which is an inaccurate representation of current AI technology. Although AI systems can perform complex tasks and exhibit a degree of autonomy, they do not possess true self-awareness or consciousness, making them fundamentally different from the sentient machines often portrayed in fiction.

AI is built on three key building blocks: storage, training data, and processing power. Hardware and software storage is essential for managing the vast amounts of information that AI systems must process to function effectively. This includes diverse training data as well as any resources needed for ongoing learning and optimization. Training data is the foundation for AI algorithms, as it provides examples from which the systems learn patterns and draw inferences. Finally, AI systems demand high levels of processing power to perform the complex computations that analyze, learn from, and act upon the data they are provided.

Conventional lighting control systems were mostly analog, relying on 0–10V technology for dimming based on voltage increases and decreases. More sophisticated digital systems allow bidirectional data exchange. The advent and adoption of standardized digital control protocols, such as DALI-2 D4i, provide a supportive framework for adding AI to lighting control systems. These protocols enable lighting systems to be powered and to access vast amounts of data via a common interface between compatible devices from various manufacturers. By creating a consolidated communication and data management framework, the DALI-2 D4i standard streamlines the transmission of data — a rich resource for AI algorithms.

Effective management of modern, large-scale lighting networks is more than just dimming and scheduling. AI systems can analyze vast amounts of data in real time, adjusting lighting settings based on factors such as occupancy, ambient light, and energy consumption. In contrast, standard lighting control systems have limited data processing capacity, restricting their ability to optimize performance. Adaptive intelligence equips AI systems to continuously learn and refine their decision-making processes, unlike standard control systems, which follow fixed rules and may struggle to adapt to changes in occupant behavior and lighting usage.

Additionally, AI systems excel in managing large, complex installations with multiple nodes and intricate control requirements. While standard lighting control systems may require frequent manual intervention to maintain performance, AI-driven systems can efficiently manage complex operations with minimal human input. AI integration into lighting systems also presents an opportunity for predictive maintenance, particularly for LED drivers. Utilizing machine learning and the data available from DALI-2 D4i certified LED drivers, systems can analyze trends in usage and performance to anticipate potential faults before they occur. They can signal the need for maintenance, replacement, or system optimization in a timely manner, preventing disruptions, reducing maintenance costs, and enhancing the longevity of the lighting system through more efficient power management. AI bolsters sustainable, efficient, and resilient lighting infrastructures by transforming maintenance from a reactive task into a proactive strategy.

The notion of return on value (ROV) amplifies the traditional understanding of return on investment (ROI) in the context of lighting control systems. ROV is a comprehensive approach, assessing not only the direct monetary returns but also the strategic, operational, and qualitative aspects. In the case of AI-enabled lighting control systems, these include the benefits from predictive maintenance, optimized control strategies, and efficient network management. All these elements collectively contribute to maximizing value, promoting a shift from cost-centered evaluation to value-centered assessment.
Therefore, ROV becomes a key factor when deciding to invest in lighting control systems. We have established that predictive maintenance can minimize downtime, enhance the lifespan of lighting components, and reduce maintenance costs and time, which also contributes to labor savings. In parallel, AI-optimized control strategies can improve energy efficiency, contributing to a reduction in carbon footprint — a value proposition that extends beyond monetary savings.
Photo courtesy of Inventronics
Artificial intelligence could prove useful in LED lighting and control systems by monitoring the health and performance of components, such as LED drivers (shown), to alert users or managers when system performance requires repair or replacement.
The financial quantification of these intangible benefits might pose a challenge, but they are still crucial in completing the value picture. Take the energy savings achieved by optimized lighting control strategies. While it is straightforward to compute savings in energy costs per kilowatt-hour, the corresponding reduction in carbon emissions contributes to an organization's sustainability goals — a value that is hard to express in monetary terms. Similarly, the labor savings resulting from efficient network management can improve worker productivity and satisfaction, contributing to a better organizational culture. When aggregated, these qualities make a compelling case for the ROV approach and underscore its importance as an integral part of ROI calculations for lighting control systems.

It is important to note that AI-enabled lighting control systems may not be ideal for every lighting installation. They are particularly well suited for large-scale applications with a sizable number of nodes and substantial data generation. In such cases, AI-driven solutions can effectively harness the wealth of data to optimize performance, adapt to changing conditions, and manage complex installations with ease. For smaller-scale lighting systems with less complexity and fewer nodes, the benefits of AI may not be as pronounced as the data set is smaller. In these applications, standard control systems may suffice, although with the rising popularity of household digital assistants, there is potential to bring some version of these advanced technologies to smaller networks. AI is a transformative force that can redefine what is possible in the realm of lighting control. Our charge as an industry is to turn the concepts of AI into practical, value-add control technologies and systems, commercializing innovations that will not only enrich our industry but also make a lasting, positive impact on our planet and its people.

CONTROLS | How can AI rewrite the lighting controls value proposition? | LEDs Magazine