ENERGY OBSERVER
A MONTHLY NEWSLETTER FROM AMERLUX®

DEC 2024

Merry Christmas Everybody

VIDEO: Amerlux's Commitment to Best-In-Class, US Made Lighting Design Solutions

Amerlux's Commitment to Best-In-Class, US Made Lighting Design Solutions – First, we want to wish everyone a very Merry Christmas and want to thank you, our customers, for another terrific year. 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 clients' business is our business, their reputation, our reputation, and their bright future, our own. Again, Merry Christmas!

National LED Market Observer

1. **Hope you had a Happy Thanksgiving!** The origins of Thanksgiving as a national holiday in the United States can be traced back to President George Washington's proclamation in 1789. His call for a day of thanksgiving and prayer marked the beginning of a tradition that has grown and evolved over time. From its solemn beginnings as a day of reflection on the blessings of the new nation, Thanksgiving has become a holiday celebrated by millions of Americans each year. It serves as a time for families to come together, express gratitude, and reflect on the values of unity, peace, and prosperity that President Washington sought to inspire in the early days of the republic. President Abraham Lincoln declared Thanksgiving a national holiday, setting the date as the final Thursday in November. Source: Day in History

2. **TRAINING: University of Colorado Boulder** – Professional Lighting Education - The University of Colorado Boulder is pleased to announce that registration is now open for the 2025 Rocky Mountain Lighting Academy (RMLA) Short Course. This four-day course will be held on the beautiful CU campus in Boulder from May 29 through June 1, 2025. General sessions cover lighting and design fundamentals along with the latest developments in technology, color, and health. Technical Track students dive deeper into photometry, optics, and luminaire design while Design Track students gain practical experience with the early stages of the design process, including developing design concepts and goals. The course emphasizes hands-on learning experiences, and the class size is limited to ensure a fun, interactive experience. Further details and registration information can be found on the program's website. For more information, please contact Bob Davis, Scholar in Residence and Director of Professional Lighting Education, davisrg@colorado.edu

3. **TRAINING: How to Design a Lighting Control System by C. Webster Marsh, CLCP and Craig DiLouie, LC, CLCP** - Based on EE105: Lighting Control System Design, a new course in the Lighting Controls Association's Education Express program provides detailed information about designing an effective lighting control solution. In Part 1 of this Lighting Controls System Design series, we learned about key documentation including the Content Intent Narrative (CIN), Sequence of Operations (SOO), and Owner Project Requirements (OPR). The next step in design development in Part 2, is to turn these requirements and conceptual design into a realized design. In Part 3 of this series on how to design a lighting control system, we will discuss installation and post-occupancy. You will learn about bidding, responding to questions from installers, reviewing submittals and defending your design, following-through with the installation of the equipment, functional testing, training essential staff, and ultimately ensuring the owner is satisfied. How to Design a Lighting Control System

4. **CAN: Finding the Ideal Lighting Solution as a First Time Grower** - Foliaj Farms, led by first-time grower Bill Reece, has chosen Sollum Technologies' LED lighting solution to power his new indoor farming operation in Muncie, Indiana, USA. Focused on growing leafy greens such as lettuce, kale, and herbs, Foliaj's large-scale warehouse will leverage Sollum's lighting technology to optimize plant growth in a fully controlled environment. CAN: Finding the ideal lighting solution as a first time grower - LEDinside

5. **EC&M's Illumination Insider** – If you are not getting this online lighting resource, think about it.
Here is the content today: Illumination Insider - Nov 13th, 2024

- Next-Generation Street Lighting Systems Support Smart Cities
- LED Retrofits – Smart, Sustainable, and Good for Business
- The Lagging Transition to LEDs in Schools – Part 1 of 3
- How Can Lighting Scenes Enhance Indoor Spaces?
- OUTDOOR LIGHTING | Light done right transforms public spaces
- PROJECT | Layered illumination heightens luxury in hotel and living spaces
- The Benefits of Tunable White Light
- Demystifying IECC and ANSI/ASHRAE/IES Lighting and Control Requirements

6. **Supporting Human Health with Circadian Lighting Design** - Our bodies are tuned to operate optimally under the natural cycle of bright daylight during the day and inky darkness at night. But many Americans these days are exposed to unnatural light conditions. Among the results is a disruption to our circadian rhythms, which can lead to a range of negative effects to our bodies and minds. The lighting industry is working to rectify the situation with lighting and lighting design that can provide a beneficial health outcome by supporting the circadian system. With the refinement of LEDs, it is now possible to install luminaires that can pour out lumens, finely tuned to a range of color temperatures. But supporting human health with artificial lighting is a nuanced proposition, with several implications facility managers should be aware of, such as the relationship with energy consumption. Supporting Human Health With Circadian Lighting Design - Facilities Management Insights

7. **Clearing the Obstacles to Circadian Lighting in Healthcare by Sarah Morgan** - Circadian rhythm lighting could revolutionize healthcare. So why is it so hard to sell? Lighting systems which emulate natural light cycles — those known as circadian-effective lighting, not simply tunable systems — have enormous untapped benefits for human health. This is especially true for patients in healthcare settings. There are many reasons behind the health benefits of circadian lighting. Lighting that mimics natural light patterns promotes cognitive function and reduces symptoms associated with memory disorders. It also has the potential to enhance quality of life for patients in healthcare environments, making their daily lives more comfortable and health-focused. Why is it, then, that despite such promise, selling circadian rhythm lighting into healthcare settings remains an uphill battle? LIGHTING FOR HEALTH | Clearing the obstacles to circadian lighting in healthcare | LEDs Magazine

8. **Embracing the Shift Toward More Eco-Friendly Plants** - This attention for reducing energy consumption made PKM decided to change their lighting system, switching from conventional lamps to LED lamps. LED lighting reduces energy consumption by around 30% and lowers operational costs. At PKM they also have high expectations for the way in which LED systems benefit plant production. Previously, the company conducted tests in their facilities to see how LED-lighting impacts plant growth and quality. Although these tests only provide a glimpse of how plants may respond to LED lighting, we anticipate that plants grown under LED lighting will be bushier with more buds with same or less light as now. Another expectation is that the plants will be more compact, particularly during the darker and colder months. This could potentially lead to a reduced need for growth inhibitors. Embracing the shift toward more eco-friendly plants - LEDinside

9. **NEMRA Launches Lighting Division** - The National Electrical Manufacturers Representatives Association (NEMRA) announces the formation of the NEMRA Lighting Division, a strategic initiative dedicated to empowering independent lighting sales agencies and strengthening partnerships with lighting manufacturers. This new division marks NEMRA's commitment to supporting the unique needs of the lighting sector as it adapts to an evolving industry landscape and to shaping a stronger future for independent agencies and those exploring opportunities in lighting The formation of the NEMRA Lighting Division integrates the American Association of Independent Lighting Agencies (AAILA) into NEMRA, whose mission closely aligns with NEMRA's. NEMRA Launches Lighting Division – tEDmag

10. **Data Centers Powering Artificial Intelligence Could Use More Electricity Than Entire Cities by Spencer Kimball** - The power needs of artificial intelligence and cloud computing are growing so large that individual data center campuses could soon use more electricity than some cities, and even entire U.S. states, according to companies developing the facilities. The electricity consumption of data centers has exploded along with their increasingly critical role in the economy in the past 10 years, housing servers that power the applications businesses and consumers rely on for daily tasks. The major technology companies are some of the largest purchasers of renewable power in the U.S., but they are increasingly turning to nuclear in search of more reliable sources of electricity. Microsoft is supporting the restart of the Three Mile Island nuclear plant outside Harrisburg, Pennsylvania through a power purchase agreement. Amazon and Alphabet's Google are investing in small nuclear reactors. In the short run, natural gas will fuel much of the power demanded by data centers. Data centers powering AI could use more electricity than entire cities

11. **New NEMA Standard Bolsters Interoperability** - NEMA announced the publication of a new standard that it says will be key in building more resilient and connected infrastructure and cities. ANSI/NEMA C137.10 standardizes lighting sensor data to facilitate better interoperability among different lighting systems within smart city applications. The collected data will further help interconnect city functions and monitor air quality, potential utility repairs, and street flooding, allowing for citizens to be alerted to potentially hazardous situations. NEMA's Lighting Systems Committee (C137) developed the standard to serve as a resource for state and local jurisdictions looking to build their smart city infrastructure, as well as for manufacturers, customers, and utilities. New NEMA Standard Bolsters Interoperability Among Lighting Systems and Enhances Infrastructure Resilience | EC&M

12. **Wireless, Digital, and IoT Lighting Systems for Modern Buildings by Colm Nee** - The choice between wired and wireless lighting control systems often presents a pivotal decision point for contractors and customers alike. Each option carries its own set of advantages and challenges, impacting factors such as cost, ease of installation, maintenance requirements, scalability, security, and flexibility. Staying at the forefront of the transforming landscape of lighting technology presents a significant challenge. Yet, it's hard to ignore the range of tangible benefits that a modern, wireless lighting system can provide to the contractors installing the systems and the building owners and occupants. This article explores the benefits of the key modern lighting technologies – wireless, digital, and Internet of Things (IoT)-based lighting systems. A Bright Idea: Wireless, Digital and IoT Lighting Systems for Modern Buildings | EC&M

13. **Trump Return Likely to Slow, Not Stop, US Clean-Energy Boom** - Donald Trump's return to the White House will refocus the nation's energy policy onto maximizing oil and gas production and away from fighting climate change, but the Republican win in Tuesday's presidential election is unlikely to dramatically slow the U.S. renewable energy boom. Renewable energy sources such as solar and wind are the fastest-growing segments on the power grid, according to the Department of Energy, driven by federal tax credits, state renewable-energy mandates, and technology advancements that have lowered their costs. Trump return likely to slow, not stop, US clean-energy boom | Reuters

14. **Trump's Energy Plan Will Boost Gas Exports, Oil Drilling** - Donald Trump's transition team is putting together a wide-ranging energy package to roll out within days of his taking office that would approve export permits for new liquefied natural gas (LNG) projects and increase oil drilling off the U.S. coast and on federal lands, according to two sources familiar with the plans. The energy checklist largely reflects promises Trump made on the campaign trail, but the plan to roll out the list as early as day one ensures that oil and gas production will rank alongside immigration as a pillar of Trump's early agenda. Trump also plans to repeal some of his Democrat predecessor's key climate legislation and regulations, such as tax credits for electric vehicles and new clean power plant standards that aim to phase out coal and natural gas, the sources said. Trump would seek to approve the Keystone Pipeline. Trump's Energy Plan Will Boost Gas Exports, Oil Drilling | Newsmax.com

15. **Trump's Take on Energy Policy by Chris Sokoll** - Here at DISC, we see the electrical distribution community ending 2024 at $141.4 billion for +2.3% overall year-over-year (YOY) growth. We see 2025 at $144.5 billion, up +2.2% over 2024. This is in line with historical norms and inflation. Looking ahead, for now, we see a robust growth year in 2026 fueled by hearty performance in both the construction and industrial verticals. Now is the time to align resources and consider strategy. There is no doubt that the new Presidential Administration will have an impact on the electrical distribution industry. It's important to consider this impact during our future planning. We can start to consider what changes may take place that will have a bearing on our forecasts and the overall direction of our industry. In the long term, balancing economic growth with sustainable energy sources will be critical, and the electrical industry will likely continue to face challenges and opportunities as it navigates the transition toward a more sustainable energy future. Trump's Take on Energy Policy | Electrical Wholesaling Christian Sokoll is president of DISC Corp., Houston, the electrical market's leading provider of sales forecasts and related market data. He can be reached at chris@disccorp.com.

16. **Electrical Industry Reaction to Presidential Election Results** - This quick analysis from more than 280 respondents provides a snapshot of how the electrical market is feeling in the wake of the presidential election. Key results: Nearly two-thirds (63%) of our EC&M reader poll expect a Trump 2.0 presidency to have a positive impact on their business. Of that group, 48% see the change as "very positive" for the electrical industry while 15% view it "somewhat positively." Far and away, the top response was "economic growth and stability," coming in at nearly three-quarters (73%) of those polled. This suggests that the overwhelming majority of respondents expect economic conditions to improve in the years ahead. Three other key considerations (taxes and fiscal policy coming in at 49%; regulatory environment at 48%; and trade policies and international relations at 48%). More than half (54%) feel "very confident" in Trump's ability to handle inflation, unemployment, and business regulation, Electrical Industry Reaction to Presidential Election Results | EC&M

Global LED Market Observer

17. **Perth Concert Hall Successfully Completes LED Lighting Upgrade** - UK – Perth Concert Hall has taken a significant step towards sustainability and modernisation with the completion of its 'Lights-Up Perth Concert Hall' project, which saw the replacement of its tungsten lighting system with an advanced LED set-up. Spearheaded by Stage Electrics, this upgrade marks a new era for the venue, enhancing both its environmental credentials and artistic capabilities. The switch from tungsten to LED lighting has provided Perth Concert Hall with numerous benefits. LED lights consume up to 80% less power, generate less heat and have a longer lifespan, resulting in lower maintenance and operational costs. The new system also offers enhanced flexibility, with instant and precise colour changes, smoother dimming and dynamic effects such as strobes and fades that were previously unattainable. Perth Concert Hall Successfully Completes LED Lighting Upgrade - LEDinside

18. **Vertiberry Picks Sollum for Strawberries** - Sustainable indoor farming group Vertiberry has announced that it has chosen Sollum's LED lighting solution for its new facility in L'Assomption, Québec. Expected to be operational by the end of 2024, the indoor/TCEA facility will serve as a test bed for Vertiberry's innovative growing methods, which include both strawberry propagation and production. Vertiberry said its decision to choose Sollum's technology underscored its dedication to producing high-quality, pesticide-free strawberries year-round in a 100 per cent controlled environment. By working closely with Vertiberry, Sollum is looking to ensure the lighting solution supports their cultivation methods, resulting in higher yields and energy efficiency. Vertiberry picks Sollum for strawberries - LEDinside

19. **Light + LED Expo India Opens Today with Future Oriented Intelligent Solutions in Lighting** - India's premier expo on intelligent lighting and LED solutions, Light India + LED Expo India's 29thedition from 11/21 to 11/23 at Yashobhoomi, IICC, Dwarka, Delhi. Hosting a grand showcase of innovative solutions in the lighting and LED industry. With 228 exhibitors and about 1,000+ brands, the current expo observes increased participation from lighting automation companies aligning with the growing needs of smart living, smart cities and rapid urbanisation. During the inaugural ceremony, the expo witnessed presence of esteemed dignitaries from the industry at: Light + LED Expo India opens today with future oriented intelligent solutions in lighting - A1 Lighting Magazine

20. **Team Creates World's First Tunable-Wavelength Blue Semiconductor Laser** - In a new study, researchers at Osaka University have created the world's first compact, tunable-wavelength blue semiconductor laser, a significant advancement for far-ultraviolet light technology with promising applications in sterilization and disinfection. With its compact design and extended lifespan, this technology could be seamlessly integrated into household appliances like refrigerators and air conditioners, contributing to a healthier and safer living environment with wide-reaching public health benefits. Team creates world's first tunable-wavelength blue semiconductor laser - LEDinside

21. **Tiger Party's First Asian LED Project Is 'Landmark Installation'** - A video art installation comprising 254 square metres of 2.9mm pixel pitch LED has been unveiled near the Taipei 101 skyscraper in Taiwan. Taipei Lumitree features a 360° LED tree and a 10m-high LED wall. The walls have a transparency rate of more than 75%. The installation is the first signage project in Asia from New York-based DOOH consultancy Tiger Party, and has been constructed in partnership with Kaiyue Construction. For the launch of Taipei Lumitree, Tiger Party has teamed up with global artistic community HUG to showcase the work of 12 artists. Tiger Party manages some of the most famous billboard in Times Square and oversees the ball drop every New Year's Eve. https://www.youtube.com/watch?v=5VvakF-YKqE

22. **Auckland Airport Completes Runway Lighting Upgrade** - Auckland Airport has become the first in New Zealand to switch its runway lighting to LEDs. The airport has installed 600 LED lights along its 3.6km runway, replacing the old halogen lamps, with up to 20 lights at a time replaced during twice-weekly overnight runway maintenance closures. In total, 240 new centreline lights, 186 touchdown zone lights, 52 threshold and 124 runway edge lights have been installed, which the airport says will last 15 times longer than halogen lights and use 70 per cent less power. A new power centre is also under construction at the western end of the airfield, slated for completion next year. Auckland Airport completes runway lighting upgrade - LEDinside

23. **4 Questions with the Designlights Consortium on LED Use in Floriculture** - The DLC recently conducted a horticultural lighting market assessment focused on food, cannabis, and floriculture production across the U.S. and Canada. One key finding from this assessment is that LEDs are becoming the go-to choice for growers with more than 50% of all money spent on lighting by growers being spent on LEDs. That being said, approximately 90% of all lit indoor horticulture spaces are still not using LED, so, LED is still far from the baseline and energy efficiency incentives should stay in place for quite a while. Visit the DLC's Horticultural Qualified Products list to view the majority of LED-based products available on the market today and find the best option for you and your facility. 4 Questions With the DesignLights Consortium on LED Use in Floriculture - Greenhouse Grower

24. **What's Behind the Increased Efficiency in LED Lighting?** - With a history in the lighting business of more than a century, ams OSRAM's history in the greenhouse market spans just a decade, originating from its activities in providing hyper-red LEDs for various industries. The high standards required in the horticultural industry helped the company gain rapid ground in greenhouses and vertical farms. With experience in industries such as laser, automotive, stage, street, and indoor lighting, ams OSRAM expanded its activities to the horticultural market. Growers benefit from stable harvest results using LEDs with superior quality. What's behind the increased efficiency in LED lighting? - LEDinside

25. **Amerlux Advances Toward Net Zero with Major Rooftop Solar Panel Installation** - The project, set to begin in late 2024 and complete in 2025, aligns with Amerlux's goal to decarbonize its 200,000-square-foot manufacturing facility in Oakland, N.J., much like its parent company, Delta Electronics, has accomplished at its Americas headquarters in Fremont, California. This initiative underscores Amerlux's commitment to achieving Net Zero Energy and leadership in sustainable lighting in the U.S. Amerlux Advances Toward Net Zero with Major Rooftop Solar Panel Installation - EdisonReport

Monthly Feature:

Lighting That Affects Human Biological Rhythms

The lighting that affects human biological rhythms which was mentioned briefly in the previous post is generally referred to as "circadian lighting." The word "circadian" originating from the Latin words "circa" meaning "approximately" and "diem" meaning "a day." https://www.ledinside.com/news/2024/9/2024_09_02_02

Many people have experienced feeling refreshed by the morning sun, whereas feeling sleepy in a darkened room. The biological function of adjusting circadian rhythms through exposure to sunlight continues to occur in the human body today, even after millions of years of evolution. Getting sunlight in the morning is crucial to human health, it helps us not only to wake up feeling energized, but also boosts the immune system and secretes serotonin, which is one of the "happy hormones." At night, melatonin, a sleep hormone derived from serotonin, is produced, and helps promote sleep. In these many ways, the sunlight and human biological functions are closely linked. It is known that Florence Nightingale, a great English nurse, took hospitalized patients out for morning walks. She must have known from experience that exercising their bodies under the morning sun may help them recover from illnesses and injuries sooner.

A typical example of HCL (human centric lighting) is circadian lighting. Circadian lighting that is currently marketed is to use cool white for the morning and daytime, which is considered to be suitable for work purposes, and to use warm white for the evening, which relaxes the human mind and body. However, those colors alone are not sufficient for circadian lighting to affect biological rhythms. It is the azure-colored (sky blue) light around 480nm, which is abundant in the morning sunlight, and helps people wake up refreshed and sleep smoothly through the production of hormones. However, this part of the lighting spectrum has rarely been included in LED lights since its wavelength contributes only a little to the luminous efficiency of LEDs.

To truly have lighting that affects human biological rhythms, it is necessary to develop LEDs that emit more of this azure-colored light. Nichia's Vitasolis™ solves that problem by giving light at a wavelength of 480nm with completely the same luminous color as ordinary white lights (2700K to 6500K). However, too much exposure to this light in the late afternoon may cause difficulty sleeping due to an overproduction of serotonin, which slows down the production of melatonin. For this reason, Nichia proposes a variety of combinations to suit different purposes: Vitasolis™ at 6500K in the daytime and the regular light at 2700K excluding 480nm in the evening, or for places such as offices where color change would be less desirable, Vitasolis™ in the daytime and the other regular lights with the same color as Vitasolis™ in the evening.

Nichia's another innovation, Dynasolis™, which further pursues the features of Vitasolis™, is lighting solution that is color/spectrum adjustable by using a combination of azure and warm white colored LEDs. One of the ways to utilize this solution is to turn on the azure-colored light upon awakening, spending the morning under the high CCT light that contains plenty of 480nm, and then gradually shifting to the warm white in the afternoon – it makes people feel as if they are in the warm sunshine even in a room. This lighting solution has already received high acclaim from many of Nichia's valued customers.

Nichia hopes that the trend of the lighting market will change to a more human-friendly direction by using such unique technologies as Vitasolis™ and Dynasolis™ that will be beneficial to the human body and enhance our daily lives. For example, for those who only have limited access to the sunlight, such as people working night shifts or living in high latitudes, or for those who have difficulty maintaining a circadian rhythm due to other reasons, Nichia sincerely hopes that its products will help them achieve more vitality and satisfaction in their daily life by helping to tune their circadian rhythm. Lighting That Affects Human Biological Rhythms - LEDinside