ENERGY OBSERVER

A MONTHLY NEWSLETTER FROM AMERLUX®

AUG 2019

Amerlux Corporate Video - Amerlux creates bold lighting solutions that add warmth and brilliance to the world. The design-and-manufacture company builds long-term relationships with architects, facility managers and lighting designers by taking every complex problem personally. Its award-winning portfolio includes innovative interior and exterior lighting products that deliver striking aesthetics and rich performance through advanced engineering. Fueled by passion, Amerlux® lighting elevates design. Innovating with the power of independent thinking, our sophisticated lines reflect your demands for fine retail, hospitality, supermarket, commercial and exterior lighting. Obsessed with performance, Amerlux products boast breathtaking precision, unprecedented energy savings and smart, streamlined good looks. Amerlux brings your vision to life. With light, reimagined. For more information, visit Amerlux.com or call 201.416.2284. https://www.youtube.com/watch?v=8RMZpOOp3Qo&feature=youtu.be

LED Energy Market Observer:

1. **NYPA Takes Good Care of Its New Smart Street Lights** - In 2018, the New York Power Authority (NYPA) announced the Smart Street Lighting NY program to install 500,000 LED street lights in cities throughout the state. In June of this year, the utility took the concept one step further by launching a program to provide maintenance to cities that have installed the new lights. On June 17, the NYPA released a request for proposals (RFP) for multiple contractors to provide routine and on-call maintenance services for LED streetlighting fixtures installed by the NYPA throughout the state. The new service program will be available to municipalities that have engaged the NYPA to implement a LED streetlighting conversion and have elected to install an asset management controls system on their streetlighting system. To date, according to the NYPA, more than 128,000 LED street lights have been installed or are in the process of being installed across the state. After reviewing proposals, the NYPA expects to select a firm and launch the maintenance program in September of this year. https://www.ecmag.com/section/lighting/nypa-takes-good-care-its-new-smart-street-lights

2. **WHITE PAPER** - Unlocking a Building's IoT Potential with Secure, Smart Lighting by ARM -IoT-powered lighting systems are backbones for smart building applications such as sensor-based energy harvesting, computer-vision-based space optimization, and artificial-intelligence-based predictive maintenance. Along with the many benefits of smart lighting, its ubiquity and connectivity also make it a target for cybercriminals. Security needs to be built into every aspect of a smart lighting system—from sensors to data transport to the IoT platform managing the lighting data. https://app.smartsheet.com/b/form/a1a3b4831b3b4bde-b6072e67f5843e08

3. **Highlights from CLTC's Recent EPIC Research** - The California Lighting Technology Center and the California Energy Commission hosted a webinar focused on research outcomes from our recent EPIC-sponsored project, A New Generation of LED Lighting Systems! The webinar focused on four key research outcomes:

- Consumer Preference Study Results
- Product Evaluation Results
- Technology Transfer Activities
- Industry Engagement

The presentation used during the webinar and supporting documents are available: https://cltc.ucdavis.edu/publication/cltc-california-energy-commission-share-recent-epic-sponsored-research-outcomes

4. **Signify Teams Ericsson to Accelerate 5G Connectivity Lighting Solution** - Signify's indoor luminaire will be embedded with Ericsson 5G Radio Dot in a joint offering that will enable service providers to easily add indoor connectivity to buildings when the lighting systems are being built or upgraded. This is the latest concept born from the successful relationship between Signify and Ericsson, who previously co-developed Lightpole Site Slim, the connected outdoor lighting pole small cell solution. The new luminaire light fixture features an embedded Ericsson Radio Dot, and will deliver not only light, but also 5G connectivity inside buildings. Ericsson's indoor small cell solution, 5G Radio Dot, is embedded into Signify's lighting systems to deliver 5G indoors. http://www.ledinside.com/

5. **Amerlux Looks to Accelerate Product Development Under Delta Group Ownership** - Delta's acquisition of Amerlux, Oakland, NJ closed on May 31, adding a significant player in architectural lighting to Delta's existing offering in power and thermal management solutions. Delta, based in Taipei, Taiwan, with American headquarters in Fremont, CA, operates through 163 sales offices, 64 research and development centers and 39 manufacturing facilities worldwide. Delta's revenues in 2018 exceeded $9 billion in power electronics, automation and infrastructure markets. Amerlux will enhance Delta's position as a provider of complete solutions by expanding its offerings in lighting, building automation, energy and security management. https://www.amerlux.com/

6. **Philips Complaint Alleged Violations of Section 337 of the Tariff Act of 1930** - Notice is hereby given that the U.S. International Trade Commission has found no violation of section 337 of the Tariff Act of 1930, as amended, by participating respondents Feit Electric Company, Inc. of Pico Rivera, California and Feit Electric Company, Inc. (China) of Xiamen, China (together, "Feit"); Lowe's Companies, Inc. of Mooresville, North Carolina and L G Sourcing, Inc. of North Wilkesboro, North Carolina (together, "Lowe's"); and Satco Products, Inc. of Brentwood, New York ("Satco"). The Commission has found a violation of section 337 by defaulting respondent MSi Lighting, Inc. of Boca Raton, Florida ("MSi Lighting"), and has determined to issue a limited exclusion order and a cease and desist order against that respondent. The investigation is terminated. https://edisonreport.com/philips-signify-loses-major-itc-complaint/

7. **Lighting Controls Association Announces New Course on Energy Codes** - The Lighting Controls Association (LCA) now offers EE203: Lighting Controls and Commercial Energy Codes, Part 3: ASHRAE/IES 90.1-2016 and IECC 2018, as a new course in its popular Education Express program. Complying with a Department of Energy ruling, various states are adopting commercial building energy codes at least as stringent as ASHRAE/IES 90.1-2016 and the 2018 International Energy Conservation Code (IECC). Authored by Craig DiLouie, LC, IES, Part 3 of EE203: Lighting Controls and Commercial Energy Codes provides a lighting controls compliance roadmap for these standards. The course identifies all sections of the energy standards, describes the requirements, and provides decision trees to simplify understanding and compliance. Part 1 of EE203, covering ASHRAE/IES 90.1-2010 and IECC 2012, and Part 2, covering ASHRAE/IES 90.1-2013 and IECC 2015, remain available at Education Express. http://aboutlightingcontrols.org/EducationExpress/

8. **Lighting Controls Association Now Offers Downloadable Courses at Education Express** - Education Express includes a wide variety of educational courses about lighting controls technology, application, design, and commissioning. While courses are available 24/7 on the LCA website, a growing number of users requested the ability to download them as PDF documents. In response to this popular request, LCA created this capability and is pleased to offer it as a value enhancement to its education offering. http://aboutlightingcontrols.org/EducationExpress/

9. **Q2 Pulse of Lighting Report Offers Updates on Tariffs and Market Conditions** - The Q2 Pulse of Lighting Report, jointly published by David Gordon's Channel Marketing Group and the William Blair investment firm is out and it offers some interesting insight into the state of today's lighting market, based 206 responses – 81 distributors and 124 manufacturer personnel and reps. The full results of the report are available for $19 at www.electricaltrends.com Contact David Gordon, president of Channel Marketing for additional details at dgordon@channelmkt.com

10. **DLC and CABA Sign Smart Buildings Collaboration Pact** - The DesignLights Consortium (DLC) and the Continental Automated Buildings Association (CABA) announced a new agreement designed to enhance and promote development and adoption of smart building technology. CABA is a global non-profit industry association dedicated to advancing home and intelligent building technologies. The DLC is devoted to driving efficient lighting by defining quality, facilitating thought leadership and providing tools and resources to the lighting market. The scope of the DLC-CABA Reciprocal Agreement includes establishing forums for exchange of information on current and planned activities and increasing engagement with hardware and software manufacturers, service providers, the utility industry, regulatory organizations, technology companies, vendors, consumer and non-profit groups, and government entities. https://www.ecmweb.com/

11. **IES Annual Conference in August 2019** - The Illuminating Engineering Society's Annual Conference, which is being held from August 8-10, provides a range of educational programming—including workshops, seminars, immersive experiences, tours, networking, and paper and poster presentations—on the art, design, science, and research of lighting relevant to lighting professionals, educators, and related design disciplines. As always, professional education is paramount, with a broad selection of CEU credits available through participation at the conference. https://www.ies.org/events/annual-conference/registration/

12. **Lighting Controls Association Now Offers Certificate of Technical Knowledge** - Education Express includes a wide variety of educational courses about lighting controls technology, application, design, and commissioning. Completion of each course qualifies students to earn AIA LU/HSW, NCQLP LEU, CALCTP/NALCTP, NLCAA, NALMCO, and CEU education credits, with the amount of the credit cited on that course's certificate of completion. A growing number of students requested that a single certificate–an Education Express diploma–be issued recognizing successful completion of all courses. In response to this popular request, the LCA created a Certificate of Technical Knowledge in Lighting Controls, which indicates that the student has a basic knowledge of lighting controls expressed in the broad range of Education Express courses. A special page is available to students so they can measure their progress. http://lightingcontrolsassociation.org/2019/07/15/lighting-controls-association-now-offers-certificate-of-technical-knowledge/

13. **White Paper: Smart Buildings And Workplace Strategies for the Future by Current, Powered by GE** - Connected lighting now has the potential to unleash additional productivity and revenue outcomes, thanks to space optimization and utilization, more informed real estate decisions and increased employee satisfaction with their work environment. The smart buildings evolution is top of mind for real estate and facilities management leaders, who continuously focus on reducing operating costs, meeting sustainability objectives, optimizing space within their real estate portfolio, and improving their employees' daily work experience. While over the past decade, much attention has been focused on energy savings and achieving sustainability goals, today there is tremendous attention being paid toward space utilization and optimization, meeting room management, and increasing employee effectiveness in the workplace. https://facilityexecutive.com/2019/01/led-lighting-smart-buildings-workplace-strategies-future/

14. **Efficiency Breakthrough for OLEDs** - The researchers from organic photovoltaic cell development company Nextgen Nano has discovered a means of producing OLEDs that demonstrate high luminosity at lower voltages. Certain organic molecules exhibited fluorescent properties at lower energy values, allowing them to illuminate at notably lower voltages than phosphorescent OLEDs and to produce a stable blue OLED with a higher operating power efficiency compared to existing blue phosphorescent OLEDs. This research means that it is possible for display applications in the future to provide superior levels of luminosity while using half the energy, which will also extend the operational life of the device.
https://luxreview.com/article/2019/07/efficiency-breakthrough-for-oleds

15. **Sanitizing Light: LEDs Become a Disinfectant Technology** - A new use of light emitting diodes (LED) has emerged. LED light is killing bacteria, fungus and mold, and the scientific community has validated the results. Lab researchers, diode fabricators and fixture manufacturers are working to market LEDs that are an effective and safer disinfectant than ultraviolet (UV) light, while also offering a much longer operational life. This newfound application could be a game-changer. In short, the intensified LED blue light excites certain molecules in harmful micro-organisms through photo-activation. Reactive oxygen species are then produced that damage and kill the harmful cells. https://www.ecmag.com/

16. **Become a Brand Leader at LEDucation 2020** - Become a sponsor of LEDucation 2020 and receive additional exposure, strengthen your credibility, and create a lasting impression in one of the industry's most successful educational and exhibition events on LED and SSL technology. March 17-18, 2020, New York Hilton Midtown, 1335 Avenue of the Americas, New York, NY 10019. https://leducation.org/sponsorship/

17. **Bridgelux Achieves 200 lm/W with Third Generation EB Series™ Products** - Bridgelux announced an expansion of its EB Series™ LED product family to include increased efficacy of up to 200 lumens/watt (lm/W), new 2700 K standard CCT options, new 90 CRI options, and new slim linear and square form factors. As a customizable emitter-on-board platform using Bridgelux surface mount device (SMD) LEDs, EB Series offers customers choice in form factors, color points and CRI options tailored to their specific project. Bridgelux EB Series products now include third generation standard linear (280, 560 and 1120 mm) and slim linear (340, 590 and 1190 mm) lengths with typical efficacies of 200 lm/W and an expanded CCT range of 2700-5700 K. New 90 CRI options are also available for improved quality of light and enable luminaires to be in compliance with California's Title 24 regulation. New custom products include eight- and twelve-inch square form factors with increased lumen output ideal for many commercial applications. https://www.led-professional.com/

18. **Lighting at Your Service: This Business Model Is Gaining Popularity by Craig DiLouie** - Well-suited to financing lighting upgrades in large projects, lighting as a service (LaaS) is a lighting industry business model in which the owner purchases light rather than the hardware that delivers it. The owner pays a subscription over a multiyear term rather than as a one-time purchase. The advantage of LaaS is it avoids an upfront lump sum capital investment for new lighting. It provides the option to pay for the upgrade as an ongoing operating expense that should be less than the energy cost savings, resulting in immediate positive cash flow. By reducing risk and simplifying the acquisition process, LaaS may facilitate a lighting upgrade that otherwise might be delayed or not approved. In addition, it facilitates the adoption of more advanced, premium features such as intelligent control, connectivity and data collection. https://www.ecmag.com/

Global LED Market Observer:

19. **Bain, Carlyle Near $3.8 Billion Buyout of Germany's Osram** - According to Osram, Bain, Carlyle has offered an amount of $39.50 per share for the buyout, which will be approximately $3.8 billion for concluding the investor agreement and to make a public takeover offer. Osram said, "The responsible decision bodies will discuss and decide on this offer shortly." Osram has been in a challenging time with its transformation goal from a lighting company into a high technology provider. After selling its lighting business LEDVANCE to Chinese MLS in 2017, Osram also announced to cut off luminaires business the year after. The company just reported the sale of Siteco to Stern Steward Capital in the end of June. https://www.bloomberg.com/

20. **Osram Accepts $3.8 Billion Offer from Bain and Carlyle** - The price is still 15% lower than its peak this year in February. After Siemens AG spun off the light bulb-making division in 2013, Osram Chief Executive Officer Olaf Berlien began to refocus on higher technology, sparking a bitter and public dispute over strategy. Bain and Carlyle's purchase of Osram would add to the $51.6 billion in private equity buyouts of European companies announced this year, according to data compiled by Bloomberg. https://finance.yahoo.com/news/osram-accepts-3-8-billion-060956210.html

21. **Austrian Sensor Company AMS is Interested in Osram After All** - AMS's renewed interest could challenge private equity firms Bain Capital and Carlyle Group, which together are working toward finalizing a €3.48 billion ($3.83B) acquisition of Osram. An Osram spokesperson told LEDs Magazine that Osram could not comment on whether it would entertain any new AMS offer. AMS elaborated little on the details of why it changed its mind, although a breakthrough in financing seems to have helped sway things. https://www.ledsmagazine.com/

22. **Korean Design Team Puts UV LED on Drone to Clean Subway Trains and Stations** - UV LEDs cover a wide range of applications including light curing, medical treatment and disinfection. And now, UV LEDs are put on drones to spew UV light in subway stations and trains for sanitization. Equipped with sensors and UVC LEDs, the drone is designed to fly smoothly around the station and emit UV LED light in the subways to efficiently and effectively clean the germs on surfaces as well as purify the air. https://www.ledinside.com/news/2019/7/uv_led_drone_clean_subway_trains_stations

23. **Barcelona Hospital Features 'Spectrally-Tuned' Lighting** - A state-of-the-art intensive care unit in a Barcelona hospital features human-centric lighting whose spectral output can be tuned to exactly match natural daylight. The facility at Barcelona's Vall d'Hebron hospital use of seven LED engines that span the visible range without any gaps in the spectral power distribution. This flat profile is achieved thanks to a careful combination of single-peak LEDs and phosphor-converted LEDs. Wavelength shifts are compensated for via feedback from an onboard spectroradiometer. https://luxreview.com/article/2019/07/barcelona-hospital-features-spectral-tuned-lighting

24. **Scottish pureLiFi, Nokia and Other Big Names Form Light Communications Alliance** - Edinburg-based LiFi company pureLiFi has teamed up with other international lighting and communication companies to establish a global association, Light Communications Alliance (LCA), for developing and refining key deployment applications of light communications technologies. Together with Nokia, Emirates Integrated Telecommunications Company (du), LEDVANCE, Liberty Global, Lucibel, LiFi Research & Development Centre, Velmenni, Zero.1, CEA Leti, and Institut Mines-Télécom, pureLiFi becomes a founding member of LCA. Light Communication technologies include Light Fidelity (LiFi) and Optical Camera Communications (OCC), both of which have been attracting increased attention over recent years. https://www.ledinside.com/press/2019/7/purelifi_nokia_form_light_communications_alliance

25. **AOT Obtains 3-Year Patent and Trademark Licensing from Cree** - LED packaging service provider Advanced Optoelectronic Technology (AOT) has disclosed it has obtained licenses for using US-based Cree's patents and trademark during July 1, 2019-June 30, 2022. Apart from maintaining LED backlighting as mainstream business, AOT has stepped into developing automotive lighting, VCSEL, UV LED devices and mini LED backlighting, company president Huang Yu-liang said, adding AOT will undertake trial production for mini LED backlighting in second-half 2019. Japan-based Nichia had made stake investment in AOT. https://www.digitimes.com/news/a20190719PD209.html

26. **Taiwan Makers Set to Offer UV-C LED Products** - The UVC LED devices target kitchenware, maternity, and baby-care product segments, the sources said. Pursuant to Minamata Convention on Mercury, production, exports and imports of goods containing mercury will be banned beginning 2020, paving the way for UV-C LED to replace mercury lamps for disinfection purposes. There is large potential demand for using UV-C LED for disinfection applications. Currently, Japan-based Nichia, Dowa Electronics Materials, Nitride Semiconductors and South Korea-based LG Innotek and Seoul Viosys are globally leaders in developing UV-C LED disinfection applications. https://www.digitimes.com/news/a20190718PD214.html

27. **Commercial Production of Inkjet Print OLED Panels to Realize in 2020** - A number of flat panel makers in Japan, Korea, Taiwan and China are developing inkjet print OLED technology, with Japan-based JOLED likely to be the first to roll out commercial inkjet print OLED products in 2020, according to industry observers. China's players have been keen to develop inkjet print technology as they aim to unseat Korean rivals who currently dominate the OLED sector. Global production of inkjet print OLED panels will grow to 1.3 million units in 2024 from about 105,000 units in 2020; or increase to 7.3 million square meters from 209,000 square meters in area production during the period, IHS Markit estimates. https://www.digitimes.com/news/a20190718PD200.html

28. **Cyprus Aims to Replace All Streetlights with LED by 2020** - Cyprus, the island country on the Mediterranean Sea, is on its way to improve energy efficiency by switching all conventional streetlights into LED. According to the report of CyprusMail, the Electricity Authority of Cyprus (EAC) has signed a contract to replace all existing lights in Larnaca. The contract will be executed by the end of August in 2019 with 1,500 streetlights switched to LED. The replacement is expected to save up to 67.56 percent of energy cost compared to current consumption. https://www.ledinside.com/news/2019/7/cyprus_to_replace_all_streetlights_with_led_by_2020

29. **World's First Luminaires Made from Light-Emitting Concrete** - The material is actually a mixture of fine concrete and tiny light-transmitting fibres. Each luminaire – which is made in Germany – features hundreds of thousands of embedded optical fibres which transmit the light incident on the back through the material. The manufacturing process is highly complex and requires numerous steps, some of which are patented. The light-transmitting concrete panels boast 200,000 light-transmitting fibres for every square metre are the starting product for special applications in architecture and interior design, in gardening and landscaping, and most recently in luminaire design. https://luxreview.com/article/2019/07/world-s-first-luminaires-made-from-light-emitting-concrete

30. **Signify Buys 51% of Chinese LED Lamp Maker, as Sales Again Dip but Earnings Strengthen** - CEO Eric Rondolat says the company is reversing an outsourcing trend, bringing manufacturing more in house. He hopes the Klite acquisition improves control of costs, supply, and intellectual property. In an effort to cut manufacturing costs, gain control of supply, and protect intellectual property, Signify is acquiring 51% of a Chinese LED lamp and luminaire provider, while announcing another quarter of slowing sales but rising profits amid ongoing restructuring. The world's largest lighting company did not reveal how much it paid for the stake in privately held Zhejiang Klite Lighting Holdings Co., Ltd., a company which sells private label and OEM goods to companies mostly outside of China. https://www.ledsmagazine.com/

31. **Zumtobel Group to Set up 11,000 LED Streetlights in Mongolia with a Million-euro Contract** - Austria-based lighting group Zumtobel Group announced it has secured a contract with the Mongolian government for installing approximately 11,000 LED streetlights of the Thorn brand in the north of Mongolia's capital. Zumtobel said that the contract is in the low double-digit million euros range. The Mongolian government aims to use light to reduce crime rate and enhance safety of the area on a sustained basis. In addition, the provision of essential infrastructure such as lighting is a key factor for attracting companies and therefore serves the overall economic upswing in the region. https://www.ledinside.com/press/2019/7/zumtobel_group_set_up_led_streetlights_in_mongolia

32. **Telensa Supports Smart Street Lighting System in New Zealand City** - Telensa, the UK-based smart street lighting and smart city solution provider, announced that its smart streetlight system has been selected by Dunedin City Council (DCC) in New Zealand as part of a contract with Broadspectrum to upgrade Dunedin's streetlighting network. There are approximately 15,000 high-pressure sodium streetlights on the Dunedin streetlight network. These lights are reaching the end of their useful life and are being converted by Broadspectrum to LEDs, which will be wirelessly connected and managed by Telensa's PLANet system. https://www.ledinside.com/

Monthly Feature:
The Next New Normal in Outdoor Lighting and Controls - https://www.ecmweb.com/

What's new in outdoor area lighting?
LED is "the new normal" for outdoor area lighting. Fewer than 10 years ago, LED made up less than 5% of outdoor area lighting sales. Now LED comprises more than 95% of sales within this category, with HID only seldomly being used in "match existing" situations. Today's LED area lighting luminaires provide 70+% energy savings as compared with HID and are virtually maintenance-free – avoiding the multiple lamp changes associated with HID lighting. Best yet, the optical control that is made possible by LEDs results in superior illumination – great uniformity without a hot spot under the luminaire or a "spill" light behind it.

If LED is the "new normal" in outdoor lighting, what is "the next new normal"?
The "next new normal" is embedded networked wireless controls. Energy savings of 70% by switching from HID to LED is good, but the customer is losing out on an additional 2X savings if embedded networked wireless controls are omitted. Given the low occupancy of parking lots in the late-night hours, it just does not make sense to burn the luminaires at full power from dusk to dawn. Embedded networked wireless controls enable an additional 50% energy saving by simply dimming the luminaires to 30% when motion is not detected. Since they are networked, the luminaires can also be grouped into zones. This means that all the luminaires in that group go to full power if one luminaire detects motion – illuminating the entire area surrounding the occupant. This ensures energy savings without negative impact to the visual environment.

Are networked wireless outdoor controls expensive?
Today's networked wireless controls typically cost a little more than a standard motion sensor. However, the low initial cost and the high potential energy savings of embedded wireless networked controls results in typical payback periods of 2-3 years on the cost of the added controls.

Are embedded wireless controls difficult to install and commission?
Because they are embedded in the luminaire, embedded networked wireless controls install the same way a regular luminaire is installed. No extra wiring is required. The sensor comes pre-programmed with default settings that provide dusk-to-dawn operation (on-board photocell) and basic motion sensor functionality (dimming to 30% during periods of non-occupancy). Further commissioning is performed from the ground using a free app on a smart phone or tablet. Here the luminaires can be "trimmed" to meet the needs of the site (and saving more energy), grouped into zones and programmed in terms of the "low" setting and dwell time.

Are there Code implications?
Yes, IECC 2015 and 2018 both require the functionality delivered by embedded networked wireless controls. California Title 24 2019 demands this functionality as well. The good news is that complying is both easy and affordable. Just specify the luminaire with the part number nomenclature for the embedded networked wireless controls and you are done.