ENERGY OBSERVER

A MONTHLY NEWSLETTER FROM AMERLUX®

JAN 2017

Amerlux Unveils Retail Retrofit Campaign to Replace Lighting Fixtures with LED - Designed to help retailers save costs on energy use and lighting maintenance, Amerlux® unveils the Multiple LED Retrofit Program to replace tired, now less efficient ceramic metal halide and halogen fixtures. Amerlux provides Hornet and Cylindrix LED Multiple fixtures that feature outstanding performance, color consistency and precise beam control to deliver reliability, efficiency and guaranteed operation savings. Hornet Recessed and Semi-Recessed High Power (HP) Multiples are available in 11W, 16W or 18W for 1-, 2-, 3-, and 4-light configurations that can replace the 15W, 20W and 39W CMH and up to 75W Halogen lamps. Cylindrix Recessed and Semi-Recessed LED offer the best combination of optical and thermal performance, aesthetics and visual comfort with deeply recessed LED light sources for enhanced visual comfort and control. http://www.amerlux.com/

http://www.amerlux.com/lighting-solutions

Our Hornet® and Cylindrix® families are among our flagship retail lines.

LED Energy Market Observer:

1. **LED Lighting Ballast Market to Grow at CAGR 26.2% till 2020** - LED lamps and luminaires use external ballasts, which are broadly categorized into two main types of external LED drivers:
    a. Constant-current drivers are used where lighting system requires fixed output current with varying range of output voltages. The range of voltage depends on the on the load (wattage) of the LED.
    b. Constant-voltage drivers are used where fixed output voltage is required with a maximum output current. In such type of LED lamps and luminaires, the current in LED light source is already regulated by internal constant driver. It requires constant output voltage, usually 12VDC or 24VDC.

http://bizled.co.in/led-lighting-ballast-market-to-grow-at-cagr-26-2-till-2020/

2. **Laser Li-Fi Is Ten-Times Faster Than LED Li-Fi** - Li-Fi technology that uses LED lighting instead of radio waves to transmit data, will now use laser-based lighting, that will transmit data rate ten times faster. Laser-based Li-Fi will have better light output than LED. As LEDs use phosphors to give white light, laser lighting will create white light by mixing the output of several lasers operating at different wavelengths. Each wavelength can be used as a separate data channel. These wavelengths let optical telecommunications carry a lot of data. While LED-based Li-Fi could reach data rates of 10 Gb/s, an improvement over the 7 Gb/s maximum of Wi-Fi, using lasers could boost that speed to beyond 100 Gb/s.

http://bizled.co.in/laser-li-fi-is-ten-times-faster-than-led-li-fi/

3. **Graphene: The Next Big Thing for OLEDs?** - The new generation OLEDs are using graphene which is a highly conductive material. It is lightweight, transparent and extremely strong. A number of scientists see graphene as the basis for a new generation of electronics. This is mostly due to its power and also the fact that it can be crumpled and bended appeals right away. While researchers continue to develop the first thin, foldable computer, a breakthrough has been made with OLEDs needed to power such a device. None other than graphene. http://bizled.co.in/graphene-the-next-big-thing-for-oleds/

4. **Philips to Sell Lumileds to Apollo at Discounted $2 Billion** - Apollo Global Management, a leading global alternative investment manager, has acquired 80.1% interest in Lumileds, a leading manufacturer of LED components and automotive lighting. Royal Philips, the parent company of Lumileds, has signed the agreement, and will retain the remaining 19.9% interest in Lumileds for a minimum period of three years, after completing the transaction, subject to the conditions of the IPO. https://www.bloomberg.com/

5. **LIGHTFAIR 2017 Features Strong Controls Focus** -The LIGHTFAIR International (LFI) 2017 conference will offer 77 courses totaling more than 190 education hours at Philadelphia's Pennsylvania Convention Center May 7-11, 2017. Highlighting the conference are two leading-edge forums that will explore some of the newest advancements in the industry: IoT & Smart Lighting Forum and Light & Health Forum. Each all-day forum is comprised of six one-hour sessions that delve into the innovative developments driving the industry forward. http://lightingcontrolsassociation.org/

6. **ZigBee Role in Smart SSL and the IoT May Change to Application Layer** - The ZigBee Alliance and the Thread Group have announced successful demonstrations of Thread-based Internet of Things (IoT) wireless networks connecting smart devices that run what the ZigBee group is now calling the ZigBee universal language. In the past, the ZigBee Alliance has championed its own full network stack, although it's not fundamentally Internet Protocol (IP) based, whereas the Thread network stack is inherently based on an IPv6 stack. Despite finding some success in smart lighting, it appears that ZigBee's IoT future may be at the application layer of the network stack and the combination of Thread and ZigBee will be on display at the upcoming Consumer Electronics Show (CES) in Las Vegas, NV. The ZigBee wireless network has been seen by many as the most mature of the networking technologies that might underlie lighting in an IoT future. http://www.ledsmagazine.com/

7. **The "Internet of Light" – the Key to the "Internet of Things" by Tridonic** - Sometime in 2016 the number of connected devices will overtake the number of people on the planet for the first time. According to calculations by Gartner, the US market research company, last year around five billion devices were able to communicate via the Internet – whether smartphones or tablets, smart electricity meters, cars or factory machines. In 2016 the figure is expected to rise to between seven and eight billion. Analysts are already talking about 24 to 35 billion connected devices by 2020. This Internet of Things is expanding at the rapid pace of more than 40 percent per year. Market researchers from BI Intelligence expect total expenditure on hardware, application development and system integration to reach 6,000 billion dollars in the next five years. Are there no existing infrastructure systems to which the Internet of Things can simply be "docked"? In fact, there are. Wherever there are people, whether indoors or out on the streets, there is artificial light. In many of these luminaires there is still plenty of space for one or other digital sensor or microchip – after all, digital electronics is necessary for modern LEDs. https://www.led-professional.com/

8. **New Flexible OLED Technology Can Endure Repeated Bending** - The new OLED panel developed by Korean researchers can be rolled up like a newspaper. The highlight is that it can remain highly efficient in spite of repeated bending. This means that the new flexible OLED technology can be used in varied wearable monitors. At present, flexible OLED technology can be found curved edges of TVs as well as smartphones. The researchers also succeeded in raising the display brightness by making the most of resonance within OLED. Resonance is an occurrence that displays a strong response to particular frequency windows and laser is a perfect example of resonance. http://bizled.co.in/new-flexible-oled-technology-can-endure-repeated-bending/

9. **Accelerating Advanced Digital Lighting Through a Controls Ecosystem by Kiran Laxman** - The LED evolution is driving a host of new advanced digital lighting applications from high CRI, tunable white to the emerging area of Human Centric Lighting (HCL). While we are still in the early stages of HCL, we are seeing signs of early adoption as color control and task tuning emerge as specification requirements especially in areas such as healthcare, education, and retail. More research is coming out, and we are already anticipating significant demand for this type of lighting, to enhance user experiences in spaces where people live, learn, work and heal. As specifiers and designers get more comfortable with the capabilities of LED light sources, interoperability with controls is considered one of the biggest challenges impeding the full adoption of advanced lighting designs and sequences of operation. http://www.ledjournal.com/main/articles/accelerating-advanced-digital-lighting-through-a-controls-ecosystem/

10. **LED Linear Applications Online Course Now Available at Universal University** - This course aims to provide electrical distributors an overview of the growing LED linear market, a summary of Universal's LED linear options and a review of common commercial applications. The new Universal University course introduces students to EVERLINE LED linear product solutions and presents real world applications alongside the numerous advantages of LED linear technology including energy efficiency, longer lifetime, color consistency and greater dimming functionality. Universal University currently offers eight educational courses, free to lighting professionals, covering a variety of topics related to lighting solutions and LED replacement options. The courses are shared via BlueVolt, an easy-to-use online education interface.
https://go.bluevolt.com/unvlt/Home

11. **'Internet of Lights' Meets Industrial Internet of Things by Gerard Harbers and Sanjay Manney** - The initial promise of LED lighting was to deliver more efficient lighting – not too hard a goal to reach considering that traditional incandescent and halogen lighting sources convert only five to 10 percent of energy consumed into light. But early LEDs did not provide light of a quality comparable to halogen or incandescent, and they were not bright enough for the A-lamp or PAR form factor. As a result, the LED industry focused on commercial outdoor lighting applications such as street lighting, where efficiency and maintenance outweighed light quality as the main drivers for success. This first foray into the world of illumination with white LEDs became known as LED Lighting 1.0: efficient (but not necessarily beautiful) light. Now, however, improvements in both the efficiency and quality of LED lighting promise to make the light in our ceilings more than simply functional illumination. This is Lighting 2.0: efficient, high-quality lighting that can communicate and interact with its environment, as well as with the users that it serves. The three essential components of Lighting 2.0 are quality of light, control and communications, and awareness and sensing. http://www.photonics.com/Article.aspx?AID=56860

Global LED Energy Market Observer:

12. **Local Players Dominate LED Lighting Fixtures Market** - The growth of the global lighting fixtures market, revenue-wise, is estimated to touch US$215.29 billion by 2021 end. The market will grow at a CAGR of 6.9% till 2021, according to a Transparency Market Research (TMR) study. North America will claim the largest revenue from lighting fixtures, which is expected to reach US$64.10 billion by 2021. The lighting fixtures revenue of the Asia-Pacific region will touch US$82.26 billion by 2021, due to its highly-populated countries and rapid industrialization. On the other hand, China's revenue in the lighting fixtures market will reach US$45.47 billion by 2021. The top global players like Philips, Acuity Brands, Hubbell Lighting, and Cooper Lighting, are facing extreme competition, and to beat this competition, they are adding innovative products into the market, and are focusing on increasing their geographical reach. Revenue-wise, the industrial and commercial sectors dominate the demands for lighting fixtures. By the end of 2021, these two sectors will generate a demand for lighting fixtures worth US$89.93. http://bizled.co.in/local-players-dominate-led-lighting-fixtures-market/

13. **Rise in Chinese LED Package Prices Continue** - Since May 2016, Chinese players have been surging LED package prices, started with Epistar's distributor in China, Luxlite, which announced a surge in LED package prices, citing a number of reasons for the price increase. Now, Chinese LED chips makers San'an Opto and HC Semitek has also declared hike in LED chip prices. Key LED package makers like Honglitronic, Smalit, Xuyu Optoelectronics, and Samsung will also increase prices this week. According to a report, in Q4 2016, PVC price was raised by 60%, plastic price by 30%, alluminum price by 30%, paper packaging price by 30%, and shipment cost by 33.6%. This price hike trend is expected to continue even through the first quarter of 2017. http://bizled.co.in/rise-in-chinese-led-package-prices-continue/

14. **Obama Poised to Block Chinese Takeover of Germany's Aixtron** - U.S. President Barack Obama is poised to block a Chinese company from buying Aixtron SE in Germany. Blocking the $714 million acquisition would derail China's ongoing quest to buy Western engineering prowess, which has sparked political concerns about foreign ownership in Europe and the U.S. Aixtron has a significant presence in the US including a research and development center in Sunnyvale, CA, which is presumably why the US can rule on the matter. https://www.bloomberg.com/

15. **Germany Says Aixtron Case 'Closed' After Chinese Bid Blocked** - The German government has taken note of China's Fujian Grand Chip Investment Fund withdrawing its takeover bid for German chip equipment maker Aixtron and therefore no longer needs to look into it, a spokesman for the Economy Ministry said. The Chinese government-backed Grand Chip Investment said its offer could no longer be fulfilled after Washington rejected the inclusion of Aixtron's United States unit over concerns it could put sensitive technology with potential military applications in Chinese hands.
http://diy-home-garden.com/2016/12/10/germany-says-aixtron-case-closed-after-chinese-bid-blocked/

16. **Chinese Bidders Walk Away from Osram Takeover** - Chinese interest in a takeover of lighting group Osram Licht AG has cooled amid signs of mounting political opposition to Chinese acquisitions in Germany. Sanan Optoelectronics and venture capital firm GSR Go Scale Capital Advisors have stopped pursuing a bid for the whole company. A Chinese takeover of Osram, which has a market capitalisation of about $5.3 billion, had already run into opposition from the IG Metall trade union. The collapse of the Aixtron deal comes amid growing objections in Germany and the United States to China buying up firms with strategic technologies abroad without allowing reciprocal transactions at home. Osram is shifting its focus from light bulbs to lighting technology, investing in chips for LED lights and making it a potential target for chipmakers such as Sanan.
http://www.reuters.com/article/us-osram-licht-m-a-china-idUSKBN1421RR

17. **Panasonic to Acquire Austrian LED Headlight Maker ZKW Group?** - Early estimates that the headlight manufacturer could value US $880 million. Industry insiders believe that Panasonic's interest in ZKW is due to its aim to penetrate the automobile lighting market, as demands in electronic appliances slows down. Panasonic has already invested in automated cars, and this domain has good potential as automotive lights are being demanded due to road safety reasons. Panasonic is also interested in ZKW automotive lighting technology to integrate with its extensive sensor technology. The two companies can work together to develop new automotive lighting products to compete with Koito and Valeo. http://bizled.co.in/panasonic-to-acquire-austrian-led-headlight-maker/

National Energy Market Observer:

18. **ASHRAE/IES 90.1-2016 Decoded** – This energy standard provides a model energy code to jurisdictions interested in regulating the energy-efficient design of commercial buildings. The International Energy Conservation Code (IECC) recognizes 90.1 as an alternative compliance standard. ASHRAE recently published the 2016 version, which supersedes the 2013 version. The U.S. DOE recognizes the 2013 version as the national energy reference standard. Starting October 2016, all states must have an energy code in place at least as stringent as 90.1-2013 or justify why they cannot comply. A look at EnergyCodes.gov reveals 13 states are currently in compliance. ASHRAE/IES 90.1-2016 is available for purchase at: https://www.ashrae.org/resources--publications/bookstore/standard-90-1

19. **Leviton Acquires ConTech Lighting** - Leviton today announced the acquisition of ConTech Lighting, a Chicago-based manufacturer of high-performance and sustainable lighting solutions and fixtures. Through this acquisition, Leviton continues its strategic growth in lighting and expands its product offerings and solutions with ConTech Lighting's high-quality, innovative designs. The ConTech Lighting acquisition marks Leviton's second in the lighting industry in the U.S. as the company looks to expand further into this market. In May 2015, the company announced their acquisition of Intense Lighting, LLC, a leading solutions-based manufacturer of LED luminaires based in Anaheim, Calif. For more information on the acquisition, visit www.leviton.com

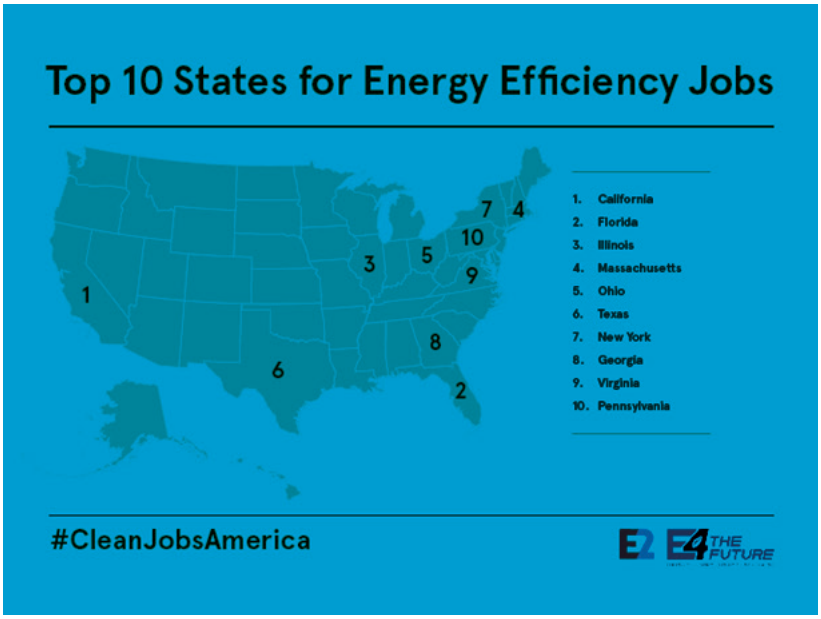
City & State Energy Market Observer:

20. **New York's Bridges to Get Multi-Million Dollar LED Facelift** - Nine New York bridges will receive an LED overhaul during the first phase of the $500 million project. The New York Crossings Project will include Whitestone Bridge, Throgs Neck Bridge, RFK Triborough Bridge, Queens Midtown Tunnel, Hugh L. Carey Brooklyn Battery Tunnel, Verrazano-Narrows Bridge, Marine Parkway-Gil Hodges Memorial Bridge, and Cross Bay Veterans Memorial Bridge. The coordinated lighting plan will also include the George Washington Bridge, which is operated by the Port Authority of New York and New Jersey. It had been previously announced that Philips Lighting would supply interconnected LED-based lighting, and controls technology for the new Tappan Zee Bridge that is currently under construction in New York's Hudson River Valley, but the new announcement, from New York Governor Andrew Cuomo, marks a significant widening of the project. 12/5 AP

21. **Chicago to Replace 270,000 High Pressure Sodium Lights by End of December** -The Chicago Smart Lighting Project is designed to enhance public safety and quality of life for all Chicagoans by providing better, more reliable outdoor lighting along with speeding up responsiveness to streetlight service requests. The Smart Lighting Project is being led by the Chicago Infrastructure Trust (CIT) in close coordination with the Chicago Department of Transportation (CDOT). When completed it will be one of the largest LED conversion projects in the country and will create the nation's largest lighting control network. http://www.ledinside.com/

22. **Detroit Completes Citywide 65,000 LED Streetlight Upgrade** - The relighting of Detroit – a city that just three years ago was in chronic darkness – has been completed on time and under budget. The Public Lighting Authority (PLA) on Thursday installed the last of 65,000 new LED streetlights, completing a massive relighting program that began in February 2014 after Mayor Mike Duggan and Detroit City Council appointed a new board to lead the project. 11/16 AP

23. **There Are 1.9 Million Energy Efficiency Jobs in America** - In December 2016, E2 and E4TheFuture released Energy Efficiency Jobs in America, which found that energy efficiency is a massive employer with 1.9 million jobs nationwide and thousands of jobs in each and every state. The report, based on U.S. Bureau of Labor Statistics data and a survey of tens of thousands of businesses across the country, provides detailed breakdowns of clean energy jobs not available previously, and it was developed and released in connection with a major U.S. DOE study of all energy jobs in America. To view the full report, along with fact sheets for all 50 states, please see here. http://www.e2.org/wp-content/uploads/2016/12/EnergyEfficiencyJobsInAmerica_FINAL.pdf



Monthly Feature:

Push for Energy Efficiency Leads to Low Quality LED Lights -

At a time when market transformation programs such as Energy Star and DesignLights Consortium (DLC) are aimed at delivering energy efficiency requirements across the lighting industry, experts point out that this increased LED energy push may actually reduce LED light quality.

Energy-efficiency programs

DLC came into existence in 2009 under the Northeast Energy efficiency partnership, with the aim to push the industry towards energy-efficient lighting such as LED. DLC then began to qualify products, and the primary DLC Qualified Products List (QPL) was released in 2010. DLC qualification soon became a requirement for the utility firms to award rebates to customers to upgrade to LEDs.

The Energy Star program headed by the US Environmental Protection Agency (EPA), is one of the popular qualifications used in incentive programs. However, most LED manufacturers seek DLC qualification as it offers an extensive range of products compared to Energy Star.

DLC continually upgrades its conditions for any product to be listed on its QPL, and introduced technical requirements version 3.0 in June 2016. This new version has introduced an entirely new categorization of high-performing premium products, which result in a larger rebate for selecting a product that is energy efficient. Recently, DLC has raised its technical requirement to version 4.1, which is scheduled to come in effect in 2017.

Significant challenges for energy efficiency drive

The ever-increasing drive for energy efficiency is pushing end users in such a path that offers them light quality that is much lower than expected. One of the main issues is that supreme efficacy LED products have to use several more LEDs on their circuit board, hence losing its ability to apply lensing to manage the overall light distribution. This leads to poor implications in light quality of these products.

The lack of customizable light distribution further leads to two critical issues. Firstly,if the static light distribution is very tight, hotspots come up underneath the uncontrolled light sources, and more light sources are needed to generate an even distribution. On the other hand, if the static light distribution is extremely wide, more lumens are needed to hit the required light levels as the uncontrolled light spills everywhere.

Hence, if a person uses premium-efficacy products with no light distribution control, it may lead to increased lighting, increased site wattage and a higher price for lighting end products.

Eventually, the end users will have to pay more and receive a low quality light distribution. The situation applies to outdoor lighting and indoor lighting. In high-ceiling applications, secondary optical lensing permits a user to focus the light more efficiently to the ground.

With DLC incentives designed for lm/W, the consumer will select a fixture that delivers less light to the floor instead of a luminaire with the optics so as to obtain the higher rebate. DLC should start paying more attention to conformity and control of the light distribution rather than just energy-efficiency of lighting products. http://bizled.co.in/push-for-energy-efficiency-leads-to-low-quality-led-lights/