

**Delta Acquires Lighting Solution Brand Amerlux** - Delta Electronics (Netherlands) B.V., a wholly-owned subsidiary of Delta, a Taiwan-based global provider of power and thermal management solutions, will acquire 100% of Amerlux's interests for USD 90 million. The transaction is expected to close during the second quarter of 2019. The aforementioned agreement includes an earn-out mechanism in which Delta will pay an additional pre-established amount for the transaction should Amerlux's 2019 EBITDA and revenue reach a predetermined target. Frank P. Diassi, founder and chairman of Amerlux, said, "Since its inception, Amerlux has consistently grown its revenue base to become a world-class provider of high-end architectural lighting luminaries. Our products have been certified in over 58 countries throughout the world. Amerlux's existing facilities in Oakland, New Jersey will continue to produce interior and exterior lighting products, and the current management and employees of Amerlux will remain in place."

Since the introduction of LEDs approximately ten years ago, the market has grown more and more sophisticated in its technology. The initial phase of LED marketing was simply the replacement of incandescent luminaries and focused primarily on energy savings. The current phase of LED marketing focuses on the quality of the light produced by the LEDs. We are now entering the third phase of LED marketing which involves controls of the luminaries, a technology in which Delta excels. The combination of Delta and Amerlux will accelerate the development of solutions for smart buildings and sustainable cities."

Chuck Campagna, president and CEO of Amerlux, stated, "We are delighted to become part of Delta as this will help Amerlux become a total lighting systems provider. Delta's comprehensive portfolio of products and solutions in the areas of smart building automation and energy management can be integrated with Amerlux's line of LED luminaries. By complementing strengths from both sides, we will be able to provide enhanced value to our customers and further our position in the smart lighting market."

<http://www.delta-americas.com/news/press>

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## LED Energy Market Observer:

**1. We Could Lose the 5G Race to China, Warns US DOD** - A new report on the risks and opportunities presented by the introduction of 5G Networks by the Defense Innovation Board – an arms-length consultation panel of the US Department of Defense focusing on technology and innovation – suggests "China has taken the lead in 5G development through a series of aggressive investment and spectrum-allocation initiatives". Not only is China is thought to have around 350,000 5G-operable base stations deployed – nearly ten times as many as are deployed across the US – the report says that China is a good position to promote its 5G technology around the world. Large Chinese technology manufacturers including Huawei and ZTE are also pushing commercial sales of 5G-enabling equipment and consumer devices. <https://www.zdnet.com/article/we-could-lose-the-5g-race-to-china-warns-us-department-of-defense/>

**2. What Is 5G? Everything You Need to Know by Mike Moore** - 5G networks are the next generation of mobile internet connectivity, offering faster speeds and more reliable connections on smartphones and other devices than ever before. Combining cutting-edge network technology and the very latest research, 5G should offer connections that are multitudes faster than current connections, with average download speeds of around 1GBps expected to soon be the norm. The networks will help power a huge rise in Internet of Things technology, providing the infrastructure needed to carry huge amounts of data, allowing for a smarter and more connected world. With development well underway and testbeds already live across the world, 5G networks are expected to launch across the world by 2020, working alongside existing 3G and 4G technology to provide speedier connections that stay online no matter where you are. <https://www.techradar.com/news/what-is-5g-everything-you-need-to-know>

**3. Apple in Talks with Potential Suppliers of Sensors for Self-Driving Cars** - The moves provide fresh evidence of Apple's renewed ambitions to enter the autonomous vehicle derby, an effort it calls Project Titan. The talks are focused on next-generation LiDAR, a sensor that provides a three-dimensional look at the road. (LiDAR, which stands for Light Detection and Ranging, is a remote sensing method that uses light in the form of a pulsed laser to measure variable distance ranges. Differences in laser return times and wavelengths can then be used to make digital 3-D representations of the target.) Apple is seeking LiDAR units that would be smaller, cheaper and more easily mass produced than current technology. The sensor effort means Apple wants to develop the entire chain of hardware to guide autonomous vehicles and has joined automakers and investors in the race to find winning technologies. <https://www.reuters.com/article/us-apple-autonomous-exclusive-idUSKCN1RT16V>

**4. The Potential of LiFi and Its Current Progress** - As LED technology advances, the adjustable wavelength makes it possible to transferring data wirelessly via visible light like how WiFi works with radio waves. In comparison with WiFi, LiFi has two strong advantages: high speed and safety. LiFi can offer high speed data transmission as light travels faster. And since the travel range of light is shorter and cannot penetrate walls, the data transmission would be safer with LiFi. Moreover, LiFi can be used in electromagnetic sensitive areas such as hospitals and aircraft cabins as radio waves are not involved. As results, LED-based LiFi communications provide a wide range of applications with its high speed and secure wireless transmission. [https://www.ledinside.com/news/2019/4/the\\_potential\\_lifi\\_current\\_progress](https://www.ledinside.com/news/2019/4/the_potential_lifi_current_progress)

**5. Microsoft Joins Amazon and Apple in \$1 Trillion Club** - On Thursday 4/25, the company's stock price opened at \$130 per share, bringing its total market cap (the price of all of its shares combined) to over \$1 trillion. It's the third company to achieve this somewhat mind-bending milestone, following Apple, which hit the mark in August 2018, and Amazon, which earned that valuation in September 2018. Stock prices fluctuate often — Apple and Amazon have both since lost their T prize, and Microsoft's value was already just under \$1 trillion as of 10:30 a.m. ET. The trillion dollar valuation is more of a milestone of flabbergasting confidence in these giant tech companies.....still unbelievable.

**6. LRC Additive Manufacturing for Lighting Consortium** - From economies of scale to economies of scope, additive manufacturing (AM) is poised to transform industries by increasing flexibility, speed, efficiency, responsiveness, and power across value chains and entire ecosystems. The Additive Manufacturing for Lighting Consortium by Lighting Research Center will enable a collaborative process to define, plan, and develop this roadmap for lighting practice, allowing for a major transformation toward a business model of custom, value-added lighting fixtures. Together, we want to develop the vision and produce a joint plan that defines the ecosystem, outlines next steps, and determines the progress and success measures. The first meetings were held in late February and early April. Going forward, the group will embark on developing an industry roadmap to make additive manufacturing a viable option for the lighting, building, and construction industries and other allied lighting industries. <https://www.lrc.rpi.edu/programs/solidstate/3DConsortium.asp>

**7. DOE Releases New Report on OLED Panel Longevity and Performance** - In a new DOE "round 2" report based on accelerated stress testing of OLED panels with a focus on general illumination applications, the researchers found improvement in the latest products, yet longevity still trails LED significantly. The report also includes an analysis of the new OLEDWorks Brite 3 panel after 1500 hours of testing. OLED remains a tantalizing technology for general lighting. The inherently diffuse panels are pleasing to most people. The thin panels offer product developers freedom of form. But manufacturing costs along with performance and reliability issues have limited OLED technology to niche uses in lighting. Meanwhile, planar edge-lit LED products are increasingly popular and able to offer some of the same benefits as OLED. Still, the DOE has continued to support OLED research and fund projects that utilize the technology, believing that maturity would bring OLED nearer to LEDs in performance and reliability. [https://www.energy.gov/sites/prod/files/2019/03/f60/ssl\\_oled-stresstest\\_rd2\\_dec2018\\_0.pdf](https://www.energy.gov/sites/prod/files/2019/03/f60/ssl_oled-stresstest_rd2_dec2018_0.pdf)

8. **Smart Building Retrofits... What's Holding You Back? by Remo Di Fronzo** - There are many reasons to consider retrofitting an older commercial asset into a "smart building." Often, for many commercial building owners and facility operators, the first priority is to reduce the energy footprint of older buildings. According to the U.S. Energy Information Administration (EIA), roughly 39% of the United States' energy consumption is from buildings. While larger urban centers can observe a jump to 70%, energy consumption should not be the primary reason for retrofitting a commercial space to be smart. Retrofitting a building into a smart building can help in achieving sustainability goals but also improve the lives of people who live, work, and play inside your space. Smarter buildings are smart for business. Retrofitting into a smart building can optimize the efficiency of operations, give facility managers greater command and control of the space, and deliver a frictionless workplace experience. All leading indicators for premium lease rates with longer terms and happier tenants. We've outlined a few to illustrate the pitfalls to avoid when considering a retrofit project: <https://facilityexecutive.com/2019/04/smart-building-retrofits-whats-holding-you-back/>

9. **Cybersecurity Challenges Lighting Industry by Craig DiLouie** - Connected lighting and the Internet of Things (IoT) promise extraordinary enhanced value for buildings, but this connectivity introduces data privacy and security risks. These issues are growing in importance in the lighting industry, which has the advantage of adopting established best practices but may need to accelerate its learning curve. Networked lighting controls is essentially a network enabling communication between devices. These systems are often intelligent, as devices are increasingly built around microprocessors. If the lighting network connects to other networks or the Internet, the consequences of hacking are more severe, requiring higher levels of security. What specific cybersecurity measures are built into the system, and how they're implemented, define how secure a given networked lighting control system is. <http://www.lightnowblog.com/2019/04/cybersecurity-challenges-lighting-industry/>

10. **Why Blue-Free Lamps Are the Next Big Thing** - First your iPhone eliminated blue light with its Night Shift app, now light bulbs are following suit. A wave of blue-free lamps is hitting the market with a promise that they won't interfere with sleep. It's the lighting industry's latest way of following the mega-trend for wellbeing and 'sleep hygiene'. People are increasingly spending most of their waking hours indoors and under artificial light, running the risk of blue light overexposure during evening hours that can inhibit restful sleep. Under the bonnet is an engineered mix of green and red phosphors energized by violet LEDs which leaves a wide gap in the blue range, removing blue completely while retaining a high quality of light, resulting in vibrant, natural white light and high color rendering. <https://luxreview.com/article/2019/04/why-blue-free-lamps-the-next-big-thing>

11. **Automotive LED Lighting to Take off with Smart Applications** - Despite that the global automotive sales have slowed down in the past year due to the trade dispute and overall market decline, the demands for luxury automobiles in China and the increasing new energy (NEV) car market still bring up the penetration rate of LED in the automotive market. LED headlights will expand gradually as the price of high-power LED falls and are also adopted by other exterior lights including direction indicators and tail lights for delivering smart functions such signal projection and matrix lighting for information delivering. As for interior lighting, LED products based on the concept of Human Centric Lighting are also utilized for vehicles. LED companies like Osram, Nichia, Lumileds, Seoul Semiconductors, Everlight and other companies have showcased various LED lighting products in different trade shows in 2019. <https://www.ledinside.com/>

12. **Automotive Lighting is Becoming Intelligent** - China's LED Market Revenue for Conventional Passenger Vehicles to Reach 800 Million in 2018. As V2V applications emerge, LED automotive lights are also emulating smartphones by adding emotes for drivers to display and engage in simple communication. According to TrendForce's analysis, China's LED market rose in recent years, and passenger vehicle panels have attained a 30% LED penetration rate in 2018. Indeed, the LED market even reached 800 million in total revenue. Are you enlightened of the developments taking place in automotive lighting? The quarterly Global Automotive Market Decode report covers firsthand information on global car market scale, the latest dynamics of critical components, and developmental trends in emerging technology related to car electronics (including IoT, self-driving cars and other new tech topics). <https://www.trendforce.com/>

13. **UV LED Market Value in 2023 Will Reach USD 991 Million** - According to LEDinside's latest report- 2019 Deep UV LED Application Market- Sterilization, Purification, and Water Treatment Markets, due to global recession, UV LED manufacturers' revenue in 2018 failed to grow as expected, but the increase was stable. In terms of the demand market outlook, the curing market will grow steadily and the major growth momentum will be surface / air sterilization, static water sterilization and flowing water sterilization. <https://www.ledinside.com/node/30300>

14. **2019 IES Progress Report Early Submittal Reduced Rate** - Now Through May 17th. The IES Progress Committee is now accepting submissions for this year's Progress Report. The committee's goal is to help members keep in touch with the developments in the art and science of lighting throughout the world, and prepare a yearly review of achievements for the Society. Now is your opportunity to present your important new products, research, publications, and activities from the past year. Submittal deadline is May 31st. <https://progress.ies.org/>

15. **Phase 2 of the Next Generation Lighting Systems Indoor Evaluations Is Open for Submissions** - The Next Generation Lighting Systems (NGLS) program is launching Phase 2 of its evaluations of connected lighting systems for indoor spaces. Phase 1, which began in July 2017, evaluated 12 systems. Phase 2 will include the upgrade of those 12 existing systems as well as the addition of new systems. The new systems will be limited to LED luminaires with integral, luminaire-level sensors and controls that are marketed as being easy to install and configure and are intended for contractor setup and configuration without onsite support from manufacturers. The deadline for new participating manufacturers to submit prequalifying documentation is May 17. More details about Phase 2 of the indoor evaluations, including documentation requirements, at: [NGLS website](#)

16. **Current, No Longer Powered by GE, will Continue to Use the Brand** - GE announced it has completed the sale of its Current, powered by GE business unit to American Industrial Partners (AIP), a New York-based private equity firm focused on buying, improving and growing industrial businesses. Financial details were not disclosed. Current's portfolio spans LED and traditional lighting solutions, along with a wide variety of intelligent controls, sensors and software. The business delivers energy savings and operational productivity for its customers, which include commercial offices, retail stores, industrial facilities and cities. Under a long-term licensing agreement, Current will continue using the GE brand on its products and services moving forward. The consumer lighting business of GE Lighting is not included as part of the transaction. [www.currentbyge.com](http://www.currentbyge.com)

17. **New Light in Old Spaces by Doug Chandler** - The market potential for putting modern LED lighting systems in existing buildings dwarfs new construction, but in many ways it's a more challenging market to serve. Thanks to the humble light-emitting diode, the lighting market is among the brighter sectors for distributors in an electrical industry that's growing steadily overall. Most of the attention goes to new buildings where architects and lighting designers are pushing the boundaries of what the latest LED lighting technology and intelligent controls can do. Meanwhile, look around you at all the buildings that make up your city and you'll quickly realize that all those offices, shops, conference rooms and lobbies, factories, warehouses and parking garages where people spend their days beneath old fluorescent, incandescent and high-intensity discharge (HID) lighting could benefit from the same technologies that are going into new buildings. The trick is getting them in there. <https://www.ewweb.com/lighting/new-light-old-spaces>

## Global LED Energy Market Observer:

### 18. Inside Spurs' Stadium: A Story of 77,000

**Lights** - TOTTENHAM Hotspur's new home in north London features some of the most integrated lighting seen in a sports ground. There are 77,000 luminaires supplied by the Zumtobel group in the 120,000 square metre, 62,062 seater stadium, the second largest in Premier League. The areas of illumination include player facilities, seating bowl, circulation concourse and the extensive façade. The newly opened stadium is not just for football – it has been designed to host National Football League (NFL) games, concerts and other major events, which meant meeting the requirements of a multi-purpose venue. <https://luxreview.com/article/2019/04/inside-spurs-stadium-a-story-of-77-000-lights>



19. **Farmers Use Light to Boost Milk Production** - James Bruna of South Alston Farm in Callington, Cornwall, is one of hundreds of UK dairy farmers who has seen milk production boosted...by LED lighting. Bruna estimates that his investment in new LED lights has increased yield by 2,000 litres per cow lactation period, an increase of a fifth over average. Milking cows exposed to 16 to 18 hours of light with a brightness of at least 160-200 lux followed by six to eight hours of darkness have consistently increased their milk yield. As in humans, light hitting the eye of the cow sends a signal to suppress the release of the hormone melatonin. Cows use the daily pattern of melatonin to set their internal clock, influencing the secretion of a number of other hormones, including insulin-like growth factor-1. <https://luxreview.com/article/2019/04/farmers-use-light-to-boost-milk-production>

20. **ISELED Alliance Expands Membership to 22 Companies** - Automotive OEMs to semiconductor manufacturers to tests specialists are new members of the ISELED Alliance that is seeking to accelerate innovation in automotive cabin lighting through highly-integrated microcontroller, LED driver, and LED modules. The ISELED Alliance has announced that eleven new members have joined as the organization continues to grow an ecosystem intended to spur innovation in interior automotive cabin lighting through tight integration of LEDs, drivers, and microcontrollers. Founder Inova Semiconductor has referred to the technology approach as creation of a “digital LED” — actually a tightly integrated modular subsystem that can be easily deployed in multiple applications inside the modern automobile. <https://iseled.com/>

21. **Hotel's Wake-Up Call - Using Lighting** - Guests at the Retreat in Iceland can book a 'natural wake up' call in the morning along with their daily newspaper and breakfast. At the time indicated by the guest, a five-minute-long dynamic light cycle is activated, which shifts the light intensity from 0 per cent to 90 per cent and from amber to a colour temperature of 5600K, to ensure that guests are woken up gently and gradually, not by a sound, but by light. The upmarket venue has also installed dynamic white lighting to allow guests to manage their own lighting requirements. Four different light scenarios controlled by small panel by the bedhead. <https://luxreview.com/article/2019/04/hotel-s-wake-up-call---using-lighting>

22. **Robot Helps Light Japan's Toyota Stadium** - In a world first, robots sped up the installation time for the pitch lighting at the Toyota Stadium in Aichi, Japan, one of the stadiums earmarked for the Rugby World Cup this autumn. By marching across the playing field and taking a range of measurements – including beam direction, horizontal illuminance, colour temperature and colour rendering – the robots helped lighting engineers rapidly configure the seven different light distribution characteristics of the 554 LED luminaires. It's believed the robotic technique could also be applied to other wide-area installations where precision lighting is required, such as other sports facilities as well as airports, manufacturing facilities, street lighting and factories. Toyota Stadium is the first outdoor stadium in Japan to install connected LED pitch lighting in combination with Philips ArenaVision LEDs. <https://www.ledsmagazine.com/articles/2019/04/robot-helps-light-japan-s-toyota-stadium.html>

23. **Signify Agrees to Acquire a Wi-Fi Lighting Controls Specialist** - Signify has agreed to acquire a small Hong Kong company specializing in Wi-Fi for wireless lighting control technology, marking the second time in a month that the world's largest lighting company has drawn attention to a technology other than Bluetooth for such purposes. WiZ Connected and its 53 employees will join Signify, continuing to work from Hong Kong and selling under the WiZ brand. WiZ offers Wi-Fi-based lighting controls for the consumer, professional, and OEM markets. Its products include hardware, software, and cloud connections for Internet of Things (IoT) schemes. <https://www.ledsmagazine.com/articles/2019/04/signify-agrees-to-acquire-a-wi-fi-lighting-controls-specialist.html>

24. **Southwell Is Europe's First Race Course with LED Lighting** - Opened in 1850, Southwell is one of just six all-weather tracks in Britain, the only one with a fibresand surface and now the only one lit with LED. The LED lighting was customized to meet the distinct needs at Southwell. It includes 641 fixtures from US manufacturer Musco mounted to 56 poles, providing precision lighting to the track, photo finish area, track egress, stables, parade ring and car park. Adaptive controls and multi-level dimming allow the racecourse to light only the sections of track being used for each race, which can vary from five furlongs to two miles, resulting in significant energy savings. Patented light control technology eliminates light spill into the centre course, stands or outside of the venue. <https://luxreview.com/article/2019/04/southwell-is-europe-s-first-race-course-with-led-lighting>



## Monthly Feature:

### Lighting Rebates: The Past 10 Years and What's Next -

<http://briteswitch.com/news/LightingRebatePastPresentFuture.html>

Lighting rebates are a way for utilities to reduce electric demand and increase energy efficiency across North America. More generally known as demand side management programs, they have been around for the past 40 years but have really gained more traction over the past 10 - 15 years. These rebates represent a huge opportunity for commercial lighting; according to the CEE, US Energy Efficiency Programs spent over \$73 million dollars on commercial prescriptive lighting rebates in 2016.

We've been monitoring commercial lighting rebates since we started 10 years ago in terms of coverage and incentive amounts. In 2008, only around 45% of the country offered rebates for commercial lighting. At the time, the rebates were mostly for CFLs, T8s and pulse start metal halide. Today, over 75% of the country is covered by rebate programs which are primarily focused on LED solutions.

The lighting rebate landscape has been constantly changing. It's hard to spot a clear trend across the country; while some programs have discontinued, others have increased. For example, Pacific Power, which operates utilities in 6 states, discontinued most lighting rebates in 2 states but then they increased them in the other 4. It all depends on the local market and their policy goals in terms of job creation, investment, and environmental impact. Each program also gets to decide which specific types of products it wants to incentivize and how much of a rebate to offer.

With LED adoption continuing to rise and energy codes becoming increasingly strict, people often wonder if lighting rebates will continue. While no one has a crystal ball, our opinion is that rebates will still be offered in the future. Energy efficiency programs have been around since the 70's and, according to the CEE, Demand Side Management Program Budgets were at a 10 year high in 2017 with over \$9.9 billion allocated to these programs.

In addition, there's still a huge amount of inefficient lighting in the marketplace. While to those in the industry, it seems like LEDs are everywhere, look around the next time you're at the doctor's office, the corner drug store, or your kids' school; incandescent, traditional T8s, and even T12s are still all over the country. Many utilities still need to curtail electric usage in order to meet the demand and helping customers replace these types of lighting is still the most inexpensive way for them to do it.

LEDs continue to get more efficient, new networked lighting controls are being introduced, and new technologies are always on the horizon. As they have in the past, lighting rebate programs will likely continue to evolve and adapt to new technologies and the changing market. These programs should continue to spur businesses across the country to upgrade their lighting in the years to come.

Over the past 10 years, BriteSwitch has helped customers capture over \$16.5 million in rebates and incentives. To see what kind of money might be available for your project, check out their website: <http://briteswitch.com/>