ENERGY OBSERVER

A MONTHLY NEWSLETTER FROM AMERLUX®

NOV 2024

Building Automation Sensors

Delta Controls' award-winning O3® Sense or O3® Edge standalone multisensor uses industry leading sensor fusion technology to deliver the most accurate view of an interior space available on the market. Integrating temperature, humidity, motion, sound, and light sensing in a single device, the O3 uses machine learning to provide fast, accurate feedback on the monitored space. The O3 is easy to install and can be configured out of the box with just a smartphone.

Lighting under control - As part of the Delta Electronics family of companies, Amerlux believes in leveraging the most intelligent and advanced lighting sensors and controls in the industry.
Whether you want wall switches or an app on your phone, we can do that. Amerlux lighting solutions are compatible with all the major manufacturers' controls currently on the market.

Interior controls - Leverage white-tuning sensors for human-centric lighting or photocells for energy-efficient dimming. Completely controls agnostic, Amerlux products work with any control system you want to use. From wireless and Bluetooth to PoE, our lights work with all controls.
With building automation systems, you can control and monitor every aspect of your building, from the HVAC, to electrical to lighting.

Exterior controls - You can leverage the humble lamppost as the foundation for your smart site or community with the 7-pin socket. This technology transforms lighting from fixture to the foundation of connected communities. Featuring wireless control with utility-grade power monitoring, constant status monitoring, intelligent on/off switching and dimming, Amerlux exterior lighting lets you control the night.

Intelligent building management - Make lighting, HVAC, window blind control, security and energy efficiency come together under one roof, one network, one company—on any budget.
https://www.amerlux.com/Products/Interior/Building-Sensors

National LED Market Observer

1. **Lighting Rebates: Bonus Programs Present Big Opportunity** - As we approach the end of 2024, businesses have a prime opportunity to save on lighting upgrades through limited-time bonus rebate programs. Across the US, a record number of utilities are boosting their incentives, offering special year-end bonuses for commercial lighting projects. These programs are designed to push facilities to upgrade before the year ends, making now the perfect time to lock in increased savings for a wide range of lighting improvements. Bonus programs offer additional financial incentives on top of existing rebate measures, but only for a limited time. The bonus amount varies by program and utility, with some offering an extra 10% - 20%, while others can double the original rebate amount. Lighting Rebates: Bonus Programs Present Big Opportunity (briteswitch.com)

2. **Changes are Coming – Lighting Legislation Bans** - Between a federal law phasing out CFLs by 2025 and a flurry of new state restrictions, it's clear that fluorescent lamps are on the way out. Energy-efficient, environmentally-friendly LEDs are the lamps of the future. And the best time to switch is now. Unlike the Federal EISA legislation that went into full effect last year, which banned the sale of inefficient general service lamps (like A19s), the fluorescent lamp bans are issued by individual states. See the state-by-state legislation bans by NAED code at: Switch Now Legislation Changes | LEDVANCE (ledvanceus.com)

3. **tED magazine's Digital Edition September 2024** - The 2024 tED Lighting Trends Survey finds optimism in a cooling economy. LIGHTING LINE-UP /THE SHIFT CONTINUES

4. **Smart Buildings are Reducing Energy Costs** - Integrated technology can drastically improve an office's energy efficiency. When areas of the office aren't used from 9 a.m. to 5 p.m. every day, occupancy sensors conserve energy by automatically adjusting lighting, heating and coolisystems. Integrated technology also aids in seamless collaboration with colleagues at offsite locations. Fast Internet connections and integrated audiovisual systems help make virtual meetings as productive as in-person gatherings. Ensuring any problems are fixed before they cause a disaster, intelligent maintenance systems monitor the building's performance and can alert management to opportunities for preventive maintenance. Smart buildings benefit the bottom line through energy savings and preventive maintenance, while promoting collaboration between onsite and offsite teams. 11 Office Design Trends For 2025 - Facility Executive

5. **Tech Giants Make Nuclear Investments to Keep Up with AI** - Amazon on Wednesday said that it was investing in small nuclear reactors, coming just two days after a similar announcement by Google, as both tech giants seek new sources of carbon-free electricity to meet surging demand from data centers and artificial intelligence. The plans come as the owner of the shuttered Three Mile Island nuclear power plant said last month it plans to restart the reactor so tech giant Microsoft can buy the power to supply its data centers. All three companies have been investing in solar and wind technologies, which make electricity without producing greenhouse gas emissions. Now they say they need to go further in the search for clean electricity to meet both demand and their own commitments to cut emissions. The International Energy Agency forecasts that data centers' total electricity consumption could reach more than 1,000 terawatt hours in 2026, more than doubling from 2022. Tech Giants Make Nuclear Investments to Keep Up With AI – electrifiED (tedelectrified.com)

6. **Using LED Lights for Seed Germination** - Opel Growers installed LED grow lights in its germination chamber and tissue culture acclimation room to increase the number of useable, uniform plants that could be transplanted. Opel Growers in Hudsonville, Mich., specializes in the production of over 1,000 perennial varieties along with woody ornamentals, annuals, ornamental grasses, succulents, and herbs. Its finished crops are marketed in a variety of container sizes to independent garden centers and landscaper wholesalers. The benefits of using the LED grow lights in the germination room include eliminating early stretch, more consistent germination, and shorter germination times. https://www.ledinside.com/news/2024/10/2024_10_16_04

7. **Superior LED Technologies Unveils Industry's Most Efficient Lights, Setting a New Standard** - Superior LED Technologies announced the launch and availability of its new Peak PRO line of full spectrum LED lighting technology for cannabis flower, which features the highest efficiency and performance of any other LED lights in the industry. This innovation sets a new standard for energy savings, sustainability and performance in cannabis LED grow lighting. Available in 680W, 840W and 1050W configurations, the new Superior LED Technologies Peak PRO line promises up to a 12% bump in performance over existing LED technologies in the industry, along with an incredible 90% increase in performance over traditional HPS lights (based on the 1050W model). https://www.ledinside.com/news/2024/10/2024_10_23_02

8. **New Advancements in Greenhouse Lighting Mean Increased Flexibility** - LED lighting has come quite a long way in the past few years. What began as a simple energy-efficient replacement for high-pressure sodium (HPS) legacy systems has become a customizable solution to better yields, faster cycle times, and even higher energy efficiency. What's coming soon? Expect more integration between the greenhouse lighting controllers and sensors, steered in real time. Combining dimmable, spectrum-controllable LEDs with sensors in the crops and smart controllers that integrate the sensor data, weather forecasts, energy prices, and more will yield further savings and provide an even more precision-managed crop. https://www.ledinside.com/news/2024/10/2024_10_22_03

9. **RESEARCH: Tracking the Sun by Berkeley Lab** - Berkeley Lab's annual Tracking the Sun report describes trends among grid-connected, distributed solar photovoltaic (PV) and paired PV+storage systems in the United States. For the purpose of this report, distributed solar includes residential systems, roof-mounted non-residential systems, and ground-mounted systems up to 5 MW-AC. Ground-mounted systems larger than 5 MW-AC are covered in Berkeley Lab's companion annual report, Utility-Scale Solar. The latest edition of the report is based on 3.7 million systems installed through year-end 2023, representing roughly 80% of systems installed to date. Tracking the Sun | Energy Markets & Policy (lbl.gov)

10. **Laser-Based Stage and Architectural Lights Bring New Capabilities and Benefits** - New Laser Illuminated Lighting Instruments (LILIs) are revolutionizing intelligent lighting by giving fresh artistic choices and improved operating parameters. Laser illuminated lighting offers numerous advantages, including brighter, laser-like beam effects, smaller beam and spot diameters, and an increased color gamut. LILI light engines have lifetimes measured in tens of thousands of hours, provide white points unattainable with other lamps, and deliver uniform illumination with little color change over time. Like the addition of LEDs to lighting, an improved set of benefits from LILIs are so great, there is no stopping the changes they will bring to the lighting industry. Laser-Based Stage And Architectural Lights Bring New Capabilities And Benefits | Live Design Online

11. **Lighting Controls: Achieving Energy Efficiency and Visual Comfort by Barry Reeb** - Lighting is often overlooked as merely a functional fixture in building design. However, it plays a critical role in shaping both the ambiance and comfort of spaces we live and work in every day. Over the last few decades, the adoption of advanced lighting control strategies has grown to be a powerful tool for both lowering energy consumption and increasing the well-being of its inhabitants. The key is in the design. There is a fine balance and intersection between lighting controls' mandate to lower a building's overall energy consumption and enhance the work/life environment through visual comfort. Lighting controls that empower people to personalize their lighting experience contribute to overall health and well-being. Lighting Controls: Achieving Energy Efficiency and Visual Comfort - Facilities Management Insights

12. **The Lagging Transition to LEDs in Schools** – Part 1 of 3 by Jessica Kelly, Andrea Wilkerson, Dan Blitzer - This article series looks at the current situation from the perspective of school facility personnel. Part 1 covers the transition to LED technology. Part 2 will identify changes coming to the lighting market, and Part 3 will offer thoughts for practical paths forward for LED systems in schools. Although commercial LED lamps and luminaires have been available for more than a decade, educational facilities have been slow to adopt LED technology. As of 2020, 78% of the lighting in U.S. educational buildings was still fluorescent, according to the most recent estimates from the U.S. Department of Energy (DOE) Solid-State Lighting program in the "2020 U.S. Lighting Market Characterization" report. The general feeling of, "We have fluorescent, we're fine," may change as the situation evolves. Stay tuned for Part 2 of this series where we discuss these upcoming changes to the lighting market regarding fluorescent availability and utility rebates. The Lagging Transition to LEDs in Schools – Part 1 of 3 | EC&M

13. **Nature's Miracle Holding Inc. Launches Wholly Owned Subsidiary, NM Rebate Inc. to Complement Core LED Lighting Segment** - Due to the Inflation Reduction Act, many utility companies offer rebates to commercial customers who upgrade to more energy efficient lighting, such as LED lights. These rebates can help offset the initial cost of installation and future electric bills. They can also apply to new construction and upgrades, and even LED replacements. NM Rebate is a complementary business to Nature's Miracle's core business as a distributor of LED lights to the commercial vertical farming space. Within the structure of the rebate program, the Company partners with financial institutions to provide rebate financing for commercial indoor growers across the country. https://www.ledinside.com/news/2024/10/2024_10_25_04

Global LED Market Observer

14. **Pack River Farm Selects Sollum's Dynamic LED Lighting for Advanced Tomato Cultivation** - Sollum Technologies, Montréal, Québec, Canada, announced that Pack River Farm, in Northern Idaho, a certified organic vegetable and microgreen farm, chose Sollum's state-of-the-art LED lighting solution to enhance its tomato, lettuce and microgreens production. Pack River Farm distributes its organic produce to local restaurants, grocery stores, and directly to consumers. Pack River Farm's decision to partner with Sollum was driven by the exceptional versatility of Sollum's dynamic spectrum lighting and the advanced zone control features. These capabilities empower growers to tailor their lighting to each crop and quickly adapt to changing crop demands, ensuring optimal growth conditions at all times. Pack River Farm selects Sollum's dynamic LED lighting for advanced tomato cultivation - LEDinside

15. **Samsung Shifts Focus: Exit from LED Business to Prioritize Semiconductor** - Samsung's LED business encompassed three primary areas: LED lighting for illumination devices, TVs, and automobiles. Initially, Samsung will halt the production of LED chips for illumination devices and gradually wind down the lighting business within its CSS division by the first half of 2026. Subsequently, in the second half of the same year, the TV LED lighting business will also be discontinued. Ultimately, Samsung aims to fully exit the automotive LED lighting sector by the end of 2030. These measures signify Samsung's steadfast commitment to executing its business restructuring strategy, redirecting resources from less profitable areas towards more growth-oriented directions. Samsung's gradual exit from the LED business and resource reallocation to the semiconductor sector represent significant strategic adjustments in response to market challenges and business development needs. With the continuous rise of China's LED market and the ongoing transformations in the global technology industry, we can anticipate that more companies will undertake similar strategic adjustments to adapt to market changes and advancements. Samsung Shifts Focus: Exit from LED Business to Prioritize Semiconductor - Semicon electronics

16. **Rice Grown in Xinjiang Desert** - In an agricultural industrial farm in Hotan, Xinjiang Uyghur Autonomous Region, rice is thriving on three-tiered cultivation racks in a plant factory, thanks to vertical, multi-layered space utilization and soilless culture technology, which significantly boosts yield per unit area. The seedling period for the new variety is 15 days, and after transplanting the rice seedlings into the vertical cultivation slots, the entire growth cycle only takes 60 days, Inside the plant factory, numerous LED lights help with rapid rice breeding. In addition to rice, they also grow corn, tomatoes, ginseng fruit, and other different crops and are continuing to explore the key technologies for rapid breeding of staple crops such as soybeans, corn, and wheat, as well as rapeseed, cotton, and alfalfa in the desert greenhouse. Rice grown in Xinjiang desert - LEDinside

Monthly Feature:

Innovative Types of Lighting System for Smart Homes in 2024 by Sam Allcock - In the ever-evolving landscape of smart home technology, lighting systems have emerged as a cornerstone of innovation. As we step into 2024, the types of lighting systems available for smart homes have expanded dramatically, offering homeowners unprecedented control, efficiency, and ambiance. This article delves into the cutting-edge types of lighting system that are transforming our living spaces into intelligent, responsive environments.

The Evolution of Smart Home Lighting

Before we explore the latest innovations, it's essential to understand how far we've come. Traditional lighting systems were simple: a bulb, a switch, and perhaps a dimmer. Today's smart lighting solutions are a far cry from these basic setups. Modern types of lighting system integrate seamlessly with our digital lives, responding to voice commands, adjusting to our routines, and even contributing to our overall well-being.

Types of Lighting System: A Comprehensive Overview

Let's dive into the various types of lighting system that are making waves in the smart home industry this year:

1. Adaptive Circadian Lighting Systems

One of the most exciting developments in smart home lighting is the advent of adaptive circadian lighting. These systems mimic the natural progression of sunlight throughout the day, adjusting color temperature and intensity to support our body's natural rhythms.

How it works:

- Morning: Cool, energizing light to help you wake up
- Midday: Bright, neutral light for maximum productivity
- Evening: Warm, soft light to prepare for rest

Benefits:

- Improved sleep quality
- Enhanced mood and energy levels
- Reduced eye strain

2. Gesture-Controlled Lighting

Among the different types of lighting system, gesture control stands out for its futuristic appeal. This technology allows users to control their lights with simple hand movements, eliminating the need for physical switches or even voice commands.

Key features:

- Intuitive gestures for on/off, dimming, and color changes
- Customizable gesture settings
- Integration with other smart home devices

3. Li-Fi (Light Fidelity) Systems

Li-Fi represents a groundbreaking convergence of lighting and data transmission. This technology uses light waves to transmit data, offering an alternative to traditional Wi-Fi in certain applications.

Advantages:

- Faster data transmission speeds
- Enhanced security (light doesn't penetrate walls)
- Reduced electromagnetic interference

While still in its early stages, Li-Fi is poised to become a game-changer in how we think about types of lighting system and data infrastructure in smart homes.

4. Bioadaptive Lighting

Bioadaptive lighting takes personalization to the next level. These systems use sensors to monitor individual occupants' physiological states and adjust lighting accordingly.

Applications:

- Stress reduction through calming light patterns
- Concentration enhancement in work areas
- Mood elevation in living spaces

5. Smart Skylights and Light Tubes

Natural light plays a crucial role in our well-being, and smart skylights are bringing this element into the fold of controllable lighting systems. These advanced fixtures can adjust their opacity, filter UV rays, and even display artificial sky scenes.

Features:

- Automated adjustment based on weather conditions
- Integration with home climate control systems
- Customizable "sky" displays for windowless rooms

6. Holographic Lighting Displays

Pushing the boundaries of what we consider lighting, holographic displays combine illumination with information and entertainment. These systems can project 3D images, create virtual windows, or display useful information right in your living space.

Potential uses:

- Virtual art galleries
- Immersive gaming experiences
- Dynamic workspace displays

7. Micro-LED Lighting Systems

Micro-LED technology is revolutionizing the way we think about display and lighting. These tiny LEDs offer unprecedented control over light output, allowing for incredibly precise and efficient lighting designs.

Benefits:

- Ultra-high resolution light patterns
- Improved energy efficiency
- Longer lifespan compared to traditional LEDs

8. AI-Powered Predictive Lighting

Artificial Intelligence is making its mark on types of lighting system by learning and predicting user preferences and behaviors. These systems can anticipate lighting needs based on historical data and real-time inputs.....

Conclusion

The types of lighting system available for smart homes in 2024 represent a quantum leap forward in how we illuminate and interact with our living spaces. From circadian rhythms to data transmission, from energy efficiency to personalized well-being, smart lighting is touching every aspect of home life.

As these technologies continue to evolve, we can expect even greater integration between lighting and other smart home systems, creating living environments that are not just illuminated, but truly intelligent. Whether you're building a new smart home or upgrading an existing space, considering these innovative types of lighting system is a bright idea that can transform your daily life. The future of home lighting is here, and it's smarter, more efficient, and more personalized than ever before. As we continue to push the boundaries of what's possible, one thing is clear: the humble light bulb has come a long way, and its journey is far from over. Innovative Types of Lighting System for Smart Homes in 2024 | FeastMagazine (feast-magazine.co.uk)