LONESTAR ELECTRIC SUPPLY

ELECTRICAL DOLLARS AND SENSE

Issue # 1

BRIGHT DATA:

Lighting's Role in the Intelligent Building

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In this issue, the author discusses how the evolution of lighting technology will shape the IoT (internet of things) strategy in new buildings, in the not too distant future

Intelligent Building research firm, Memoori, projects 3.6 billion mobile devices will be connected to commercial buildings' lighting systems by 2021

Technology adoption on the rise

The Electrical Industry is on the verge of becoming a glamorous profession. That's right, the largest industry the average American has never heard of, has the potential to become widely known as a progressive (and dare I say, cool?) industry. What is this image makeover attributed to, you ask? The answer: paradigm shifts. Wikipedia defines a paradigm shift as "a fundamental change in the basic concepts and experimental practices of a scientific discipline." In simpler terms, it can be thought of as society adopting a better way of doing things. The chief example of a paradigm shift that has recently impacted our industry is the shift from fluorescent to LED as the main light source in commercial buildings. That shift is going to birth new shifts, which will birth new opportunity for all of us.

The adoption timeline of LEDs has occurred simultaneously with the rise of two prevalent trends in society: 1) The rapid rise of the production and performance of semiconductors, used in all digital electronics (check out Moore's law). 2) The desire to connect devices to the internet. These three parallel timelines are no accident, and, the combination of the them has provided our beloved Electrical Industry with the opportunity to help the United States become the world's leading exporter of IoT (internet of things) standards, which could be its third most significant export, to Hollywood and professional sports!

How will lighting continue to change?

The advancement of commercial lighting and controls will continue to serve as the springboard for our Industry's involvement in shaping IoT standards. Although price, lumen performance, and energy savings (usually in that order) currently determine which type of lighting and controls will be designed and installed into commercial spaces, that criteria will change.

The purpose of lighting will no longer be to simply light the space for activity. Lighting will enable a building and its occupants to have a two-way conversation via the quantity and quality of data that is received by, and sent to lighting fixtures. If the chillers and boilers are the heart of the building, and Building Management Systems are the brain, the network of connected lighting fixtures will become the nervous system of the building, responsible for collecting and transmitting data that is actually used by building owners and managers, rather than dumped, on a daily basis. Lighting fixtures will become the conduit for collecting useful data, and managing the following:

1. Energy Savings (lighting and HVAC reduction)
2. Security & Safety (location of employees and visitors during normal operations and emergencies)
3. Physiological Wellness (bed turnover in healthcare facilities, employee productivity)
4. Marketing to retail consumers (tracking purchases and shopping habits via apps)

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The future is now

Lighting and lighting controls manufacturers have already gone to market with the technology required to provide building owners and operators with this type of data. Savvy developers, property managers, and tenants are already investing in this type of technology, for both existing and new buildings, as they realize the most expensive and precious resource in any commercial space is the human resource.

New energy codes, such as IECC 2015, and building managers' desires to reduce their operating costs, have driven the adoption of advanced lighting and controls that offer native energy management software. Versions of these systems that have wired architecture have been available for many years (e.g. Lutron's Quantum and Eaton's Fifth Light), and will be available in wireless platforms, beginning November 2016 (e.g. Lutron's Vive and Acuity's nlight Air).

Austin, Texas based company Ketra is arguably the most prominent manufacturer currently offering lighting and controls technology that measures, controls, and provides data for tunable color temperature and spectrum, which improves physiological wellness by creating color spectrum and intensity that mimic the sun's natural light, enabling building occupants to maintain natural circadian rhythm. Ketra's technology is anything but scientific mumbo jumbo. The three most prominent commercial applications in which you'll find this technology are healthcare facilities, corporate office spaces, and retailers. Prominent companies such as Google, Mercedes-Benz, DKNY, and the Museum of Science + Industry in Chicago can be found in Ketra's portfolio of clients.

What's next?

Providing energy savings and management and improving employee productivity are only the tip of the iceberg for lighting's future value proposition. The quality and quantity of useable data will continue to rise with the number of mobile devices that get connected to a building's lighting system. Bluetooth and WiFi technology used in conjunction with integral occupancy, photocell, and temperature sensors will enable fixtures to change light levels accordingly, along with sending signals to Building Management Systems to adjust temperature, reserve a conference room, track building occupants during emergency situations, and send retail consumers a coupon for steak sauce while they're picking out their meat with the butcher.

This type of connectivity is less than five years away. According to Memoori, an Intelligent Building research firm, there are approximately 830 million connected devices in commercial buildings today. That number is expected to surpass 3.6 billion by the year 2021.
Acuity's ByteLight solution, which incorporates indoor positioning technology into its lighting fixtures, is an excellent example of technology that has already been brought to market, and will continue to become more commonly designed and installed by professionals in our Industry.

The race for standards

As with any prominent technology, the Electrical Industry's mainstream adoption of the types of technology discussed in this spotlight will be determined by how quickly standards emerge in the IoT realm. Large data companies such as Cisco and Qualcomm are prominent players in campaigning for, and forming data standards.

The thought leaders in the Electrical Industry (e.g. manufacturers and manufacturers' representatives, designers, contractors, distributors, inspectors) are in a perfect position to demand their seat at the table for developing and implementing standards, and capitalizing on the same. The only commodities required in every commercial space that have the position, spacing, and prominence to capture, send, and receive useful data are the lighting fixtures, fire sprinklers, and ceiling materials.

My money is on the lighting fixtures.