

A decade ago, when white LEDs began entering the architecture marketplace in force, early adoption came with misgivings. The new light source would drastically cut electricity consumption over many more hours of life — but the color temperature was cold, or brightness seemed insufficient. Like most disruptive technologies, LEDs promised to revolutionize the industry. Just as soon as users could stop thinking twice about them.

Manufacturers have very quickly remedied those limitations since then, and Architizer asked USAI Lighting to walk us through the most interesting advances. The New Windsor, N.Y.-based manufacturer has a knack for lighting innovation, as family patriarch William Littman built the first fluorescent lights that GE introduced to the public at the 1939 World's Fair.

Littman's granddaughter Bonnie is president and CEO of USAI Lighting today. Sitting down with Architizer, she shared several projects that demonstrate the performance and aesthetic capacities of a new generation of USAI luminaires. Boasting recent improvements alongside unbeatable energy efficiency and minimal maintenance, our virtual tour proved that LEDs, once disruptive, are becoming dominant.

Seamless Substitution for Traditional Sources

While commercial lighting accounts for more than half of the LED marketplace, LEDs' penetration of commercial lighting overall still has its best days ahead. The transition from old to new technologies is on display at Pirch, a 24,000-square-foot kitchen and bath showroom in Glendale, Calif., designed by Fitch with lighting design by Santa Monica-based Oculus Light Studio.



Photo Credit: Mark A. Steele Photography, Inc.

Residential clientele are welcome to make themselves at home in Pirch; they can even grab an apron and saucepan in one of the demonstration kitchen's cooking stations. Reflecting this easy interaction, Fitch decided to convey a domestic ambience in the room's design, and Oculus followed suit with a mix of metal halide adjustable fixtures located in linear ceiling elements, combined with fluorescent wall washers, and LED accents. Utilizing BeveLED 2.0 with Warm Glow Dimming downlights, whose color temperature warms to 2,200 K as they dim, the effect almost exactly mimics the dimming curve of the beloved and familiar incandescent lamps still normally found in most American homes.

Color Customization

As the dimming spectrum showcased at Pirch suggests, contemporary LED luminaires can give users maximum control over color temperature. Color Select, another proprietary technology from USAI Lighting, is one such tool for color tuning, allowing designers and operators to illuminate a space in white light featuring a color temperature ranging from candlelight's 2,200 K to the 6,000 K of a cloudless sky.

At Island Hotel in Newport Beach, Calif., local lighting studio Full Circle Design tuned color to orchestrate the mood of the hotel's in-house restaurant, Oak Grill. The resulting luminaires, called Color Select, produce cooler light for business crowds at noontime, while on leisurely nights and weekends they emit a warm glow. Though Full Circle used Color Select mostly to experiential effect, its color tuning also promises real impact on human performance. Studies of circadian rhythms indicate that the blue spectrum — the color temperature dialed into Oak Grill for lunch hour — prompts energy and focus, while its absence cues the body for relaxation and sleep.

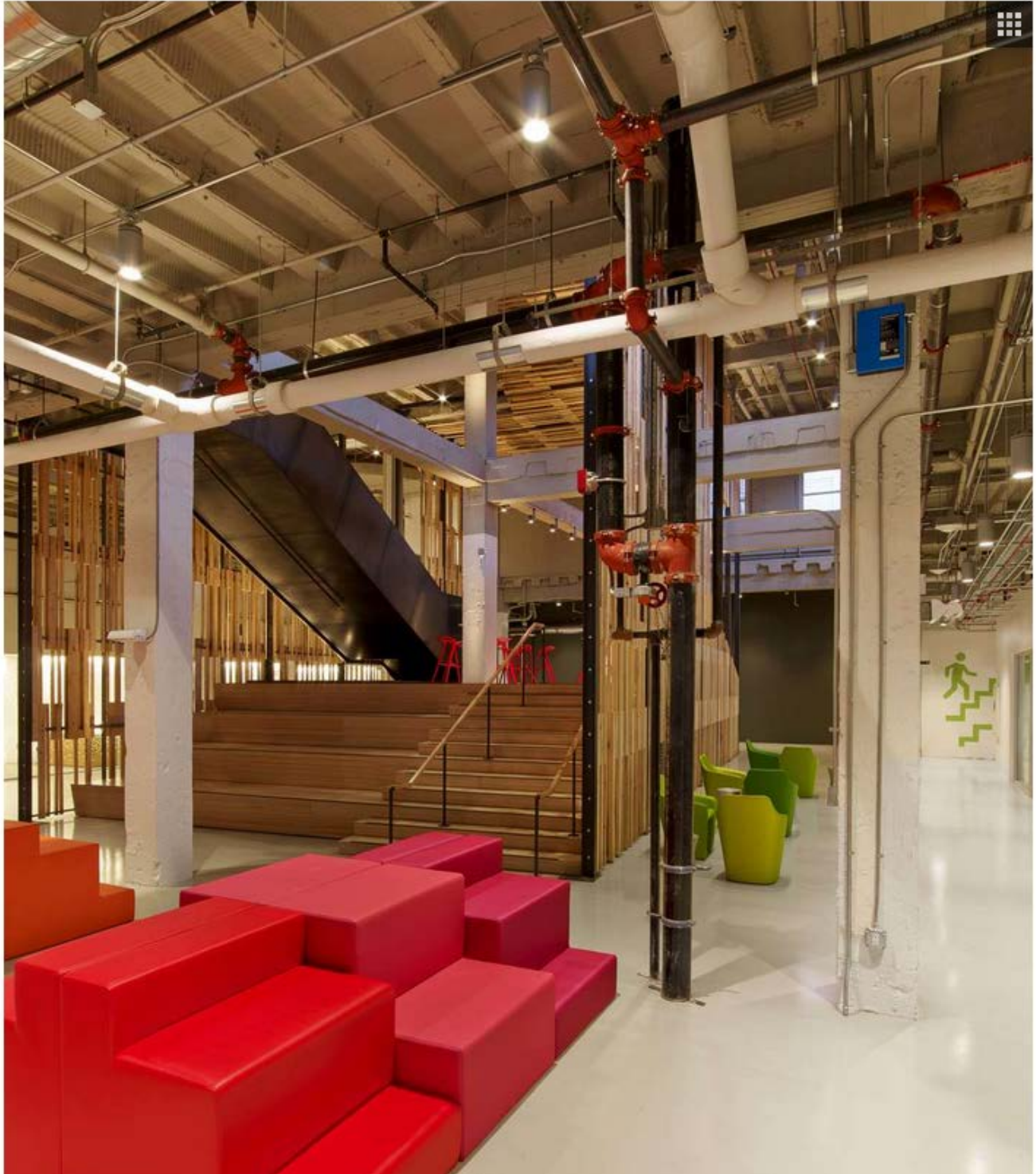


Color Select tuned to three different color and intensity settings in a kitchen

High Performance

According to data collected by the U.S. Energy Information Administration, LEDs are doing more with less: Averaging all LEDs shows that the typical LED produced today gives off 100 lumens per watt, which is significantly more output than just a few years ago. For comparison, a 60-watt incandescent bulb gives off 16 lumens per watt, and that statistic has changed little.

Delivering brighter light without boosting energy consumption certainly benefits the sustainability effort. That should also come as an immediate relief to energy-conscious designers wanting to properly illuminate tall interior spaces requiring powerful light sources. The USAI-made [BeveLED 2.0 Cylinder downlights](#) are ideal for such settings, and global studio CD+M Lighting Design sourced them for the Chicago offices of Motorola Mobility. The 605,000-square-foot Gensler-designed space is located within the Chicago Merchandise Mart, where football field-sized floors and high ceilings demand superior output. Illumination from the sleek, 6-inch-diameter cylinders deliver as much as 3,125 lumens and create a comfortable working environment for employees all throughout the space, whether at their desks or elsewhere, while also harmonizing with the tech-industrial appearance of Gensler's scheme. Other members of the BeveLED 2.0 family offer similar high performance like the Cylinders, such as the BeveLED Max Output product family.



Motorola Mobility. Photo credit: Eric Laignel

Multiple Design Solutions

Aesthetics are an even more pressing concern when ceilings are low. That's one of the constraints that Horton Lees Brogden's Boston office had to work with when designing the lighting for the Verizon Innovation Center, which is nestled inside a San Francisco office building sporting 8-foot ceilings. The architects at Nelson varied exposed and dropped ceilings to create experiences of compression and expansion in the otherwise confined space. In turn, the Horton Lees Brogden team combined USAI's [NanoLED NXT Cylinder](#) and [NanoLED NXT](#) luminaires, respectively. The suspended and recessed fixtures created continuity among LED modules and optics, as well as the related visual vocabulary showcased in the space. The lighting design of this project won it a 2014 IES Illumination Award of Excellence.

TPG Architecture and One Lux lighting design Studio faced similar conditions when it transformed 42,000 square feet of low-ceilinged space into a new showroom for Perry Ellis International with USAI products. Because the company comprises the Perry Ellis flagship and separate clothing lines with their own identities, TPG created distinct, yet related, showrooms for each. A selection of NanoLED NXT and BeveLED fixtures supported TPG and One Lux's same-but-different approach; square downlights identify the Perry brand, for instance, and round trimless downlights were specified for Rafaella.



Perry Ellis showrooms. Photo credit: Tom Sibley Photography

Variety also yielded a range of performance outcomes, because a showroom does double duty—as a demonstration retail environment and workplace for both employees and clients. The multiple lighting sources produce necessary ambient illumination, as well as directional lighting for display walls that included options for high lumen output and color rendition to accent specific product lines.

Versatility

A single fixture can be used in many different ways, as in the example of Birkenstock Lighting Design's work on the renovation of San Francisco International Airport Terminal 3. Here, lighting goals were as extensive as the \$138 million project overall: the design team sought to illuminate the concessions, boarding, and waiting areas, plus the airport's award-winning collection of art, all while doing better than required by Title 24, the California Energy Commission's standards for building efficiency.

Birkenstock used BeveLED 2.0 LEDs throughout the terminal, specifying the fixture in different wattages to accomplish wall-wash, downlighting, and other specific tasks. For the sweeping concessions corridor, the studio specified 33-watt BeveLED 2.0 dimmable downlights, and it used 24-watt and 16-watt versions for medium-height and low ceilings elsewhere. In another example, the designers relied on 33-watt BeveLED 2.0 for the airport museum, by using a tighter beam of light to accent the artworks.

That a single luminaire can accomplish multiple tasks sums up the power of today's LEDs versus those of yesteryear. They boast not just better color temperature or higher intensity, but a whole suite of improvements at once. And by boosting a building's environmental performance as they always have, this new generation of LED fixtures is not only surpassing traditional expectations for lighting, but setting the bar higher as well.



Above and at top: San Francisco International Airport Terminal 3. Photo credit: Joe Fletcher Photography