



The M&M's World store in Orlando demonstrates the care in color transmission that must be considered when designing LED lighting systems.



LED Lighting and LEED

At a time when an extended economic slowdown and the accelerating pace of energy-efficient and environmentally friendly technologies has prompted a newly vigorous pursuit of ways to conserve both energy and funds, any strategy that combines going green with saving some green is bound to be a hit.

So retailers and developers around the nation and the world have increasingly been experiencing what seems like an insatiable appetite for LEDs. Specifically, a strong spike in interest is being shown by retailers and facilities managers in taking the plunge to adopt LED light bulbs. Their intention is to capitalize on the much-publicized promise

➤ Bulb swappers beware: LED lighting holds potential but is still in its developmental infancy.

of cost savings and conservation associated with LEDs and other high-efficiency lighting options.

We have seen major big-box retailers as well as large manufacturers' facility directors experimenting or plunging into LED retrofits with insufficient evidence to support the claims of the lamp sellers that effective paybacks can be gained.

Returns on Investment

As some retailers are discovering – whether in a new store or an existing location, a renovation or a retrofit – adopting new technologies is rarely as simple as it might seem on the surface. When it comes to lighting, one cannot

simply replace existing incandescent bulbs with new LEDs and expect to maintain the integrity or the experience of the space. Because the sources have technology that inherently differs from one to the other, the result of a retrofit cannot be easily or readily predicted.

LED lighting is significantly different in operation and ambience than legacy bulbs. The technology – although greatly improved with each iteration of production models and continuing to move forward – is not yet to a point where LED lighting can deliver the same aesthetic impact. In the rush to adopt LEDs, this critical point has been somewhat overlooked.



It is a telling example of the degree to which LED technology is still in its relative infancy that the manufacturing process for LEDs involves a “binning” process of hand-sorting, akin to that of diamonds, in an attempt to sort LEDs in search of those of uniform color and brightness. Even more frustrating for retailers who are looking to upgrade their lighting infrastructure and adopt new bulb technologies is that the cost savings have been somewhat exaggerated. Translating the energy-efficiency potential of LEDs into dollars and cents off the bottom line is almost never as simple as bulb-swapping.

Remember That Color

For facilities managers – and especially when retrofitting areas where the “work” the lamp is doing is less critical to the human response – LED retrofits can make a little more sense and create less impact on the user. For example, corridors and stairwells have long been places where lights typically operate day and night. Moreover, in stairwells people clearly are less interested in how they look, what they are reading, what the colors of the wall look like or the complexion of some of their co-workers.

The latter example relates to the fact that humans have very poor color memory, except for the color scale in the yellow-white and red-white category that relates to their complexions. When a light-skinned person is “flushed” or pale, we see it immediately if, in fact, we know them and remember their normal skin tone. LED lighting renders color and skin tones a little differently, and in areas where people interface frequently, an LED retrofit can take some time to get used to.

Retailers that are looking to upgrade their lighting technologies must consider what they may be sacrificing in terms of aesthetics when converting to an entirely different light source. The question becomes not only how they can do it but how they can do it well, saving money and energy in the process. The answer

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to that question – and the search for cost-effective new options in retail construction, design, maintenance and operation – has prompted a growing appreciation for the importance of strategic lighting design.

Skilled lighting designers can use lighting technologies and principles to seemingly remake and reinvent a retail space. This virtual renovation can transform the character and experience of the store with the skilled implementation of lighting design, methodology, products and applications.

Forward-thinking retailers are increasingly turning to this community to reshape the customer experience and breathe new life into the retail environment without moving so much as a single store sign. At a time when spending limited resources wisely is an obvious priority, illuminative reinvention in lieu of wholesale renovation is a very appealing option.

Lighting the Way

Fundamentally, quality lighting can have a dramatic and appreciable positive impact, not only on how a retail environment looks, but on how it feels, directly affecting the experience of consumers as they move through the space. Lighting is intimately connected to people’s perception of comfort and quality, and the art and science of retail lighting is a critical component of a well-designed retail location.

Those with the proper appreciation for the nuanced balance between the experience and the technology can help



both architects and retailers be more flexible and have more options.

Merchandise lighting has to not only light the merchandise on display so that the customer reaches for it, but must also subsequently make that consumer look and feel better than they thought they were before they walked into the store. Retailers like Victoria’s Secret and the Apple Store have done a tremendous job of harnessing the principles of retail lighting in a way that accentuates their products and caters to their customers’ sensibilities.

Victoria’s Secret understands that delicate fabrics and skin tones require a certain kind of lighting, while the bold lighting, highly reflective surfaces and contrasting matte finishes at the Apple Store evoke a very different—but equally effective—set of emotions and associations.

It is important to understand that, although there is a physics to retail lighting – what kind of bulbs are used, where the light is you mounted, the contrast ratio between ambient light and focused lighting, the absorption of light through materials, and the reflectivity of the backdrop – there also is a very human calculation that must be performed. That equation is different for every retailer and unique to every space.

In a very real sense, shopping has evolved to encompass a kind of social messaging. Shopping is social, participatory theater. Lighting designers recognize that the behavioral component to >>



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As stores look to upgrade their lighting technologies and save some money in the process, they also must pursue the best opportunity to leverage these new technologies and ideas in a way that makes sense economically, functionally and financially.

In office environments, one must be careful to understand that light on the work surface is not the only significant component of the space. When a space has been illuminated by a lighting professional, it is certain to have lighting on walls, art and pieces of architecture that help to define a space.

LED lamps do not always replicate the intensity or the beam spread of the lamps they are replacing. We have seen many instances where this has led to a disappointing and sometimes expensive experience.

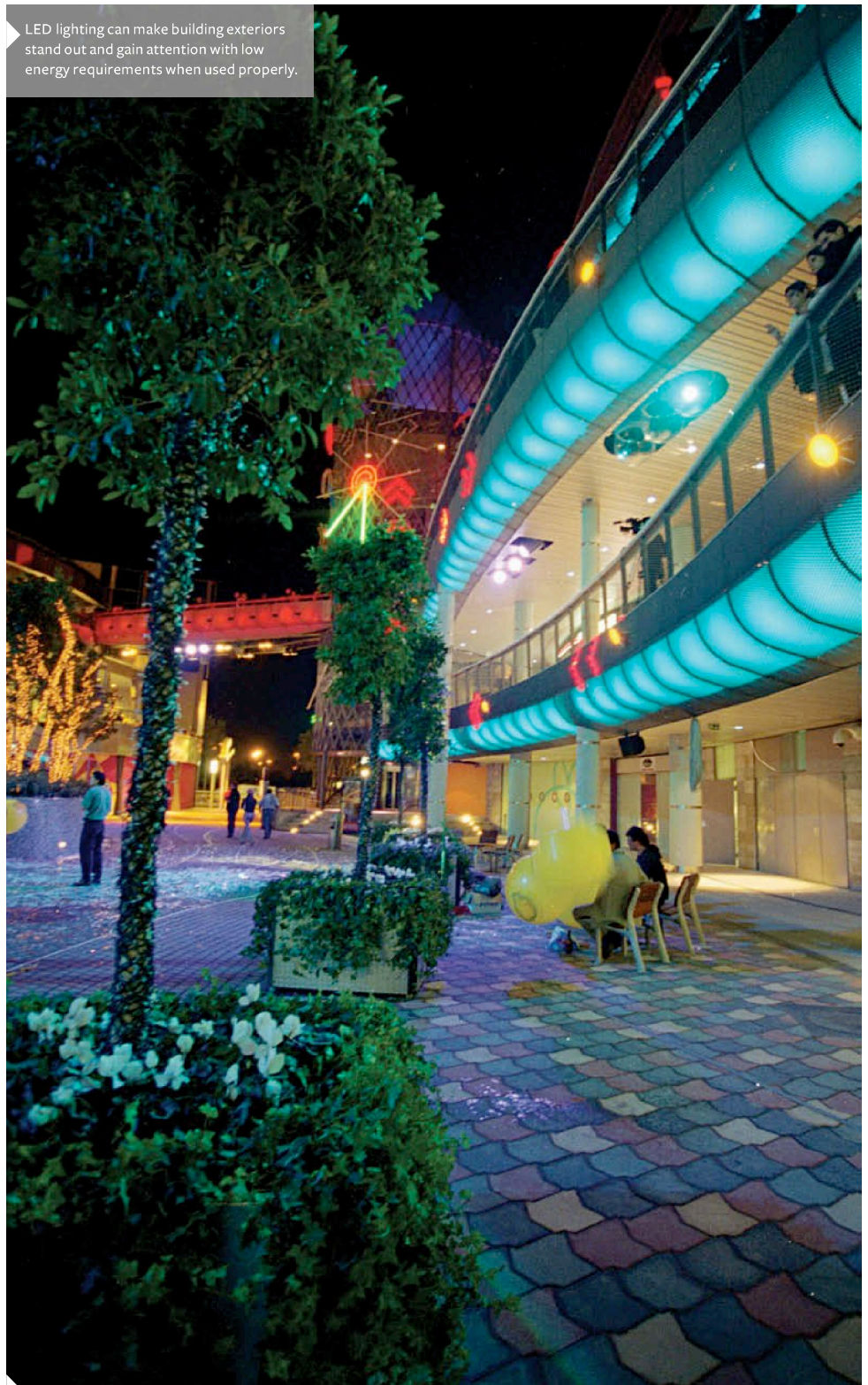
Less is More

Ironically, one of the best ways for retailers to take advantage of new technologies and cutting-edge lighting design ideas is to pay attention to a very old-school saying: Waste not, want not! Lighting modulation is a key consideration for store owners/operators looking for the best ways to improve the quality of their lighting while reducing their costs.

Design lighting capable of adjusting to one's individual needs. A flexible, efficient lighting design that utilizes dimmers, strategic positioning and artful design touches to reduce the need for raw wattage can save money and open up more opportunities to introduce LEDs without compromising the lighting quality of the space.

LEDs are small, efficient and potentially long-lasting, but they are not a particularly high-powered light source. The closer you can get the light to the product, the more efficient and effective LEDs become. By using architectural detail and thoughtful retail design to conceal the light source, it is possible to

LED lighting can make building exteriors stand out and gain attention with low energy requirements when used properly.





drop the amount of watts per square foot by as much as half.

Something as simple as a dimmer can save between 10 percent and 30 percent on lighting energy costs. One also must be careful to test the LED lamps with any dimmers that are either already in place or are intended to be used for reducing energy as part of the new plan.

Cove lighting and down-lighting is another great way to introduce low-wattage linear LED lighting and save some energy and money in the process. Cove lighting works best as a kind of “architectural tracery,” helping to highlight the ceiling architecture. LEDs are a very effective, efficient and affordable way to meet the needs of almost any cove lighting application.

As LEDs become more effective or as they provide more light-per-watt, they will be used more often in warehouse applications. In this case particularly, LEDs may find a great home. First, LEDs are dimmable and can be easily modulated in brightness. Better yet, as they dim, they inherently last longer, just like incandescent lamps. Coupled with occupancy sensors (some being better than others—I like optical sensors), LEDs can provide a terrific and long-lasting alternative to high intensity discharge lamps and even give dimmable fluorescent systems a run for your money.

What You Don't Know Can Hurt You

One of the dangers of setting out to upgrade lighting technologies in the name of efficiency or cost effectiveness is a failure to account for context. Unanticipated details can potentially throw a costly wrench in the works. For most retailers, considerations pertaining to the larger retail environment – nighttime security lighting requirements in a mall or mandatory maintenance or upgrade clauses in a retail lease – can have an enormous impact on when, if and how to upgrade lighting systems.

Facility management professionals frequently are not closely coordinated

with the developer’s design team. Investing in a costly lighting upgrade intended to achieve a positive return on investment over the claimed decades-long lifespan of the new bulbs is hardly feasible if the space is scheduled to undergo a renovation in five years.

The LED industry is naturally bullish and enthusiastic about the potential of this new technology. Although LEDs certainly have expanded the palette of lighting options and made great strides from a technical standpoint, progress still needs to be made. In the meantime, retailers need to carefully consider how to balance the quality of the aesthetics and experience in their stores with the value of saving a few dollars on their electricity bill.

The bottom line is that it is important not to shoot yourself in the foot with a green bullet. Because of that shifting cost-benefit equation, and because the mechanics of retrofits can differ drastically when switching to LEDs – even if the raw volume of light is the same, the contours and experience of that light may be very different – one should first seek detailed, high-quality mock-ups and modeling.

Accurate, sophisticated modeling that calculates a detailed breakdown of the likely costs and potential savings and to-scale mock-ups that demonstrate exactly how new lighting will appear in the retail space should be a non-negotiable part of every retail lighting upgrade or redesign.

Be sure to calculate an accurate cost of replacing the existing lamp or fixture. Labor factors should include any shutdown time and fixture cleaning (in the event of a lamp swap-out) added to the actual warranty time that the lamp and power supply is guaranteed. Be cautious, because the claims of lamp life rarely relate to the warranty.

Although marketing materials can claim 100,000 hours or more, the warran-



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ty will rarely be more than five years, and even at that, it may not cover any labor.

Although the latest green technologies are still evolving and the realities of retail lighting design encompass a number of sometimes subtle complexities and considerations, retailers who take the time to evaluate their options thoughtfully are discovering that it is possible to be energy-efficient and eye-catchingly spectacular at the same time.

If the new CityCenter complex in Las Vegas – arguably the brightest, showiest and most visually dynamic city in the world – can achieve LEED Gold certification in energy efficiency and still present an extraordinary visual and experiential environment, the average inline retailer might just be out of excuses. If a showcase piece on the Vegas Strip can go green, save money and look great in the process, just imagine what anchor and inline retailers can accomplish. ☺



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