



Did you know?

LIGHTING CAN ACCOUNT FOR as much as 30-40 percent of electricity use in a typical commercial facility and is a primary source for significant cost savings. Studies reveal that the majority of commercial buildings in North America still utilize outdated lighting systems that could readily be upgraded to achieve substantial energy, maintenance and cost savings, while at the same time improving on the quality of light. Energy efficient lighting can lead to significant savings, and lighting that performs better over time means fewer replacements, less disposal costs, and minimize disruptions to operations. The initial cost of a lighting system represents only a small fraction of the total cost of lighting; statistics show that the bulk of the cost comes from the energy used to run the system. The cost of a retrofit can quickly pay for itself with the long-term energy savings.

Fortunately, the lighting industry has developed a wide variety of innovative technologies that have revolutionized the end-user market, delivering high-performing and energy-efficient lighting products that can reduce lighting costs by

New energy efficient lighting technologies offer exciting upgrade opportunities

by Susan Bloom

as much as 30-50 percent. The following is an overview of several popular lighting upgrade products.

T8 linear fluorescent lamps and electronic ballasts

T8 lighting systems comprised of 32-watt fluorescent lamps driven by electronic ballasts, which were first introduced in the early 1990s, have been rapidly replacing older and less-efficient T12 fluorescent lamps systems driven by magnetic ballasts that are present in many commercial facilities. This popular commercial upgrade can routinely reduce energy consumption and costs by 30-40

percent, driving 2-3 year paybacks, while significantly improving the quality of light.

In addition to standard T8 lamps and electronic ballasts, a new generation of optimized, "high-efficiency" T8 lamps and electronic ballasts has recently been introduced. Available in a range of energy-saving models, including 30 watt, 25 watt, and 17 watt versions, these products can reduce total system wattage by over 45 percent relative to the use of older T12 fluorescent systems driven by magnetic

ballasts, and by as much as 20-30 percent relative to the use of conventional T8 lamps and electronic ballasts. Low mercury versions are also available to ensure that the lamps do the utmost to promote environmental responsibility and sustainability.



Controllable lighting systems

Gaining popularity within the commercial and institutional sector within the last 5-10 years, dimming options are readily available for fluorescent lighting configurations and allow users to further reduce energy consumption, minimize maintenance concerns, increase the degree of personal control over lighting systems, and promote environmental sustainability. Offering end users a cost-effective, energy-efficient, and controllable alternative to their existing lighting systems, dimmable fluorescent systems combine the long-life and energy-efficiency of fluorescent lamps with the controllability and full-range dimming capabilities of incandescent systems and represent an easy-to-install undertaking.

Dimmable fluorescent lighting involves the combination of fluorescent lamps, dimmable electronic ballasts, and control products such as manual dimming controls, light-level sensors, occupancy sensors, clock switches, and centralized controls.

Dimmable fluorescent lighting systems have evolved rapidly, resulting in the availability of an increasingly powerful and easy-to-use-and-install array of options optimal for retrofit as well as new construction applications. A wider variety of lamp types than ever before are capable of being dimmed, and the market's broad selection of ballast and control components have been made increasingly compatible. Advances in electronic ballast technology over time have enabled manufacturers to dim lamps to levels of 5 percent and lower, and the installation of dimmable fluorescent systems has been simplified by the availability of ballasts that require no extra wiring (due to the removal of additional control leads), enhancing ease of installation.

As dimmable fluorescent lighting continues to penetrate offices, hotels, schools, and healthcare facilities, the future of these systems continues to evolve. Digital Addressable Lighting Interface (DALI), a two-way communication system, will ultimately bring digital technology to lighting. The two-way communication will allow facility managers to proactively address such items as lamp and ballast failures prior to receiving phone

calls from tenants. In addition to two-way communication, DALI provides flexibility to designs and installations and brings a new level of intelligence to the ballast. The installation of controllable lighting also enables the achievement of sustainable (green) building status through such practices as daylight harvesting, a method of strategically bringing natural daylight into a building's interior.

T5 HO and T5 VHO linear fluorescent lamps with amalgam technology

Based on their energy efficiency and high lumen output, T5 HO (high output) and T5 VHO (very high output) fluorescent lamps are becoming increasingly popular upgrade options in a variety of industrial and high-bay applications that have been previously dominated by HID (high intensity discharge) technology.

Through the incorporation of amalgam technology, which enables the delivery of greater light output over a wider temperature range, these fluorescent lamps are optimal for such applications as unconditioned warehouses, shop floors, factories, and even big box retail establishments. Representing outstanding alternatives to HID technology in industrial spaces that can run extremely hot or cold, T5 amalgam technology provides white light, no colour shift, and the benefit of controllability via dimmers or occupancy sensors. Compared to 400 watt universally-mounted metal halide lamps, T5 VHO lamps, for example, can save up to 40 system watts per fixture and deliver as much as 75 percent longer lamp life, as well as associated reductions in maintenance and re-lamping costs. T5 fluorescent lamps with amalgam technology also deliver the added sustainability benefits of lower mercury levels relative to their HID counterparts.

Rapidly expanding in application and growing in popularity, T5 HO and T5 VHO lamps can now offer industrial users all of the long life and energy-efficient benefits that fluorescent technology has to offer with no sacrifice to light output.



LEDs

LED (light emitting diode) technology is the lighting of the future, and represents one of the most sustainable lighting systems available in terms of low watt high efficiency, no mercury or lead, emitting no UV, giving off very little heat, and the fact that LEDs can last up to 25 years or more compared to the one-year or shorter life expectancy of many incandescent

bulbs in the commercial setting. Due to their long-life, energy efficiency, brightness, colour consistency, and low maintenance requirements, LEDs are popular in a variety of outdoor and architectural venues, as well as iconic installations around the world (including the Toronto CN Tower, Buckingham Palace, and the Times Square New Year's Eve Ball in New York City), and are currently ideal replacements for incandescent lamps in such applications as illuminated exit signs, traffic signals, and specialty arenas such as refrigerated displays.

The focus of a great deal of investment and R&D by both lighting manufacturers and the government based on the promise they hold for significantly reducing global energy consumption, LEDs have been hailed by many experts as "the future of lighting." They have recently begun to penetrate the broad range of general lighting applications, as the market now offers a range of LED retrofit products that represent high-efficiency replacements for incandescent and halogen technology in a variety of applications that call for accent and ambient lighting.

Ceramic metal halide systems

Compared to other HID systems, ceramic metal halide lamps last longer and offer improved colour rendering and colour stability over lamp life. They are highly efficient and cost-effective, especially when coupled with electronic ballast technology. Based on their outstanding performance and energy-efficiency, compact low-wattage ceramic metal halide lamps have become a popular alternative to halogen sources in a variety of retail and hospitality settings.

Ceramic metal halide lamps are also available for those higher-wattage indoor and outdoor applications requiring high quality white light in greater quantities. In addition to offering high lumen maintenance, excellent colour rendering, and long life, medium wattage ceramic metal halide lamps incorporating dimming capabilities deliver outstanding energy efficiency and lumens per watt over the life of the lamp within a variety of outdoor floodlighting, high-bay retail applications, and public venues.

These exciting new energy-efficient technologies support sustainable design and can be part of an overall high-efficiency lighting system that may help end users meet local energy codes or help achieve a higher level of sustainable certification.

Through the availability of the aforementioned high-performing and energy efficient lighting upgrade options along with government rebates and legislation incentivizing the use of more sustainable lighting technology, there has never been a better time to reduce your energy and maintenance costs and improve your facility's lighting quality and ambiance. If you have ever questioned the impact that a lighting upgrade could have on your organization's bottom line, consider this: If your company's net income as a percentage of sales is 5 percent, saving \$5,000 per year on energy costs is the equivalent of an increase of \$100,000 in top-line sales. Don't wait to capitalize on the benefits that an energy-efficient lighting upgrade can offer your facility. 

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