K-12 Energy-Lite Lighting

by Michael Pickles

K-12 schools in today’s high-energy country can cut electricity costs dramatically by switching to efficient fluorescent lamps, adding occupancy sensors and implementing daylighting strategies where possible. In some school districts, this technology can save more than $1 million per year in energy costs and lighting in certain applications. Some districts are also experimenting with more general use of LED lighting.

The Springfield City School District in Springfield, Ohio, recently upgraded its lighting technology in the hope of lowering lighting costs without compromising safety or comfort. It worked. The district spent $320,400 on retrofitting lighting gear and labor and saw its $186,340 per year in electricity costs, recouping the cost of the upgrade in a little over three years.

K-12 schools in today’s high-energy country can cut electricity costs dramatically by switching to efficient fluorescent lamps, adding occupancy sensors and implementing daylighting strategies where possible.

In some schools, emerging LED technology can cut electricity costs even more than fluorescent lighting in certain applications. Some districts are also experimenting with more general use of LED lighting.

EnergyLITE Technology also equipped the schools, trailers and large areas of the school with occupancy sensors that turn off the lights when no people are present.

“Springfield City illustrates the savings that districts with newer buildings can expect,” Smith says. “Districts with older buildings have additional opportunities. For example, you can replace incandescent and T12-T8 ballasts with T5 electronic ballasts, which are more efficient and cost-effective.

Older schools often have exit signs illuminated by incandescent lamps, which typically draw 40 watts. LED emergency lights will draw only 2 watts. In addition, LED lights are designed to last from 20,000 to 30,000 hours for changing lamps. Estimates place the total cost of one incandescent sign at $500. That’s $21 per year for 20,000 hours. In contrast, similar LED signs cost $350. That’s $18 per year.

Improving Lighting Technology, Delivering Lighting Costs

While LED lighting is gaining credibility in some school lighting applications, four-foot fluorescent lamps remain common in other environments. Mounted in plaster boxes, these lamps are found in four-foot-foot fixtures. These lamps produce 4000 lumens of light.

Twenty years ago, 4-foot fluorescent lamps provided most of the lighting for K-12 schools, offices and gyms. By the middle of the 1990s, 8-foot T8 T5 fluorescent lamps had replaced the T12s. T12 lamps remain popular today.

T12 and T8 lamps. What’s the difference? Each comes as a four-foot tube. The difference is in the diameter of the tube. T8 is 0.5 inch in diameter. T12 is 2.28 inches in diameter. A 12-foot T8 lamp is 24 inches long. A 12-foot T12 lamp is 16 inches long.

In short, the T8 tube reflects the number of lights of eight-inch in diameter, the longer the number, the smaller the diameter.

Likewise, recent introductions of T8 lamps are 5½-inches in diameter.

Experts distribute T8-T5s are ready to take over. T5 lamps operate with 28 watts, the same wattage as T12s. Moreover, the T5s use only slightly more footcandles than T12s, making them less energy efficient but more energy savings in the long term. For additional energy savings, try K-12 energy-saving lamps.

By reducing the diameter of the lamp, engineers generally reduce the amount of power consumed. When light in the case of the T12 lamp, it may eventually be true as the technology improves.

In conclusion, fluorescent lamps give redesigners more flexibility and enable them to improve the optics of the fixtures, (continues Marjorie). While the power needed of T12s is not an issue, the quality of the lighting is improving. That may be less important in some installations.

The Big Boom

Lighting for some larger school spaces is housing on energy efficiency, too.

In the gymnasium, for instance, 150-watt metal halide lamps are using 1½ to 7½ T12 lamps that used over three times the wattage required for halide lamps. "Fluorescent lamps not only save energy, they achieve a much higher lumen output of high-intensity discharge lamps," Pickles says. "The lamps typically provide more than 100 lumens per watt, largely because there is no power leakage, the lights won’t wane right like fluorescent lamps don’t have that problem.

Metal halide lamps also shift color over time; fluorescent lamps do not.

California is one area shifting to fluorescent lighting in middle schools and high schools. Elementary school cafeterias are also different.

Elementary school cafeterias often double as auditoriums and use two lighting systems. At mealtimes, every fluorescent lamp provides illumination. Audiences, however, require brighter lights that can deliver, brighter and cast a spotlight. "Incandescent and halogen lamps are easy to kit," Marjorie says. "Incandescent is the covering but the same level of control. Incandescent and halogen lamps are here to stay in auditoriums.

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