

The Real Cost of Lighting

Sundown Lighting & Electrical

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Clients often focus on the cost of lamps assuming that if they can control lamp cost they have effectively controlled the cost of lighting. The truth is that lamps are the least expensive component of a lighting system. Lamps typically represent only 3% of the total cost of operating a lighting system. Labor will typically account for about 6% of the lighting costs. Ballasts also account for roughly 6% of the total lighting cost. The real expense is the energy to power the system, which can account for as much as 85% of the total lighting cost.

Since energy accounts for the bulk of the total lighting cost, a professional lighting audit will determine if newer, energy saving retrofits can be implemented. The goal is to select technologies that will deliver the proper maintained lighting levels, while at the same time reducing as much energy as possible. Before implementing any lighting retrofit, a controlled test will validate projected energy savings and maintained light levels. The retrofit should also incorporate an ongoing group relamp and a planned lighting maintenance program. This will maintain both light levels and ensure proper energy savings by maintaining the correct lamp type.

Group – vs. – Spot Relamping.

The cornerstone of any planned lighting maintenance program is planned group relamping. Group relamping is the process of replacing all lamps at a pre-determined time based on total hours of operation rather than changing lamps individually only as they fail. By replacing all of the lights in a fixture at one time, the labor cost can be reduced by as much as 80%!

Over time, light output will naturally diminish as lamps age. In fluorescent lighting, the typical lumen depreciation can be 15% or higher. This combined with the accumulation of dirt and dust on reflective surface can reduce the effective light reaching the work surface by as much as 40%. Therefore, an effective group relamping program will include cleaning of all fixture reflective surfaces at the same time.

Predictable Failure.

Since all lamps have a rated life, determining when to group relamp is straightforward. The manufacturers rate lamp life on a mortality curve. At 100% of the rated life, 50% of the lamps will be burned out. Conversely this means that only 50% of the lamps will be burning. The Environmental Protection Agency and lighting professionals alike recommend replacing lamps at 60 to 70% of their rated life when the number of outages is relatively low (less than 9%).

Group relamping is analogous to replacing the spark plugs in your car. All the spark plugs are changed at the same maintenance interval (hopefully before they fail). This saves time and money and improves the overall efficiency of your car. Gas mileage will decline, as sparkplugs age. Similarly with lighting, the overall efficiency and output of the system decreases as lamps age. The most efficient maintenance method is to group-replace the lamps, just as you would group-replace the spark plugs in your car.

The Planned Maintenance Approach.

A planned maintenance approach should first begin with an analysis of the facilities lighting. Knowing the rated life for each lamp type and then calculating the actual burn hours will provide a basis for when a group relamp should be implemented. Group relamping principles apply equally to all lamps whether interior fluorescent fixtures in a high-rise building or HID lamps in tall parking lot pole.

Regular scheduled inspections on a periodic basis should be implemented to maintain the system at its peak performance. Burned out lamps that are not replaced in a timely fashion can cause ballasts to burn out prematurely thus costing more to maintain in the long run.

Overall, a planned maintenance approach will save money, reduce labor costs, improve the quality of lighting, minimize disruptions to users, and allow for better energy management practices.