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EnergyLogix Solutions Inc.

energytalk

Choosing The Right Lighting

Key Factors:

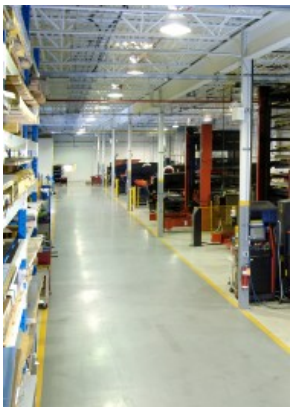
- Know what the lumens/watt efficiency actually is for each lighting option
- Understand how the lumens output degrades over time for each option
- Consider application factors such as operating temperatures, frequency of on/off switching, startup time requirements and physical layout
- Consider the up-front installation costs for each lighting type

Lighting used to be much simpler. It wasn't really about efficiency, you just chose based on what was required for the end application. Now, modern lighting technologies offer the promise of better efficiency — but have also created a confusing array of choices. The key to making a confident choice on the right lighting for your application is to make sure you've got the real facts on lighting efficiency and the true pros and cons of each lighting type.

No single technology is ideal for all applications, and lighting efficiency (i.e. light output for each input watt) varies widely. You might be surprised to learn that LED lighting is not nearly as efficient as you've been led to believe; you might also be surprised to learn that for many applications, HID luminaires should not be replaced with fluorescent lighting.

Cost is also an important factor. You might find a very efficient lighting solution that has a very high up-front cost — meaning a long return on your investment. You'll want to strike the right balance between cost and efficiency, while meeting the needs of your application.

Finally, try to work with contractors not tied to any one type of lighting. You'll need unbiased information in order to make wise lighting decisions.



Match your lighting to your application needs and budget

Inside this issue:

LED Lighting — Ready For Prime Time?

In short — yes, but only for small form-factor applications, and only if you can handle the high initial costs.

A number of manufacturers are already mass-producing LED lamps to replace inefficient 60 and 100 watt incandescent lamps, and the energy savings are substantial. These lamps also offer long operating life, with the only downside being the high lamp costs, which remain two to five times the cost of a competing CFL lamp with comparable efficiency.

For large form-factor applications, such as large office lighting, high-bay and retail lighting, LED actually offers lower lumens/watt efficiency and higher initial cost than either fluorescent or HID lighting.

The bottom line: stay small with LED for now.

HID Lighting Gets New Life With Electronic Ballasts

Digital electronic HID ballasts solve many of the problems of traditional magnetic HID ballasts

Reports of HID lighting's demise are greatly exaggerated — especially with the introduction of digital electronic ballasts. HID lighting offers a number of advantages, including high lumens efficiency, temperature immunity and small footprint. However, when paired with traditional magnetic ballasts, HID luminaires also suffer from some significant downsides: long startup and restart times, substantial lumens degradation over time, and reduced efficiency (as the ballast itself consumes 15% of the total wattage).

Switching to a digital electronic ballast enables the use of lower-wattage metal halide lamps, to get equivalent lumens output over the life of the lamp. This is because the electronic ballast maintains the light output within 5% of the initial value, whereas magnetic ballasts will see 30% lumens depreciation after only 5,000 hours, and a whopping 50% depreciation at 20,000 hours (the full lamp life).

Digital electronic ballasts also dissipate less energy within the ballast itself — meaning less heat emission — and also offer much faster startup and hot restrike times compared to magnetic ballasts.

T8 & T5 Linear Fluorescent Lamps

"When it comes to absolute efficiency, linear T8 and T5 lamps still rule."

When it comes to absolute efficiency, linear T8 and T5 lamps still rule. Lighting efficiency is measured in lumens (light output) per watt (input power); under normal operating conditions, T8 & T5 linear fluorescent lamps can supply 100 lumens/watt, compared to 75-90 for metal halide HID and 65-75 for LED.

Which type you should choose depends on your application and operating conditions.

In office environments, where lamp temperatures will be close to room temperature, T8 25W and 28W offer the highest efficiency (~100 lumens/watt) at the lowest cost. Medium-bay applications (16-25 foot ceiling height) can make use of 32W high-output T8 lamps if the space is not too warm, while high-bay applications (> 25 foot ceiling) often require the use of 54W high-output T5 lamps.

In dusty or dirty environments, T5 lamps can be more susceptible to light degradation due to their smaller surface area. This can be alleviated with the use of enclosed fixtures.

What's Your Supply Voltage?

Make sure you verify the supply voltage before purchasing

It matters because the voltage system in Canada is different from the United States. In the US, three-phase electrical service for commercial and industrial customers is at 480 volts, meaning that tapping one leg to ground provides 277 volts; in Canada, our three-phase service is at 600 volts, meaning that one leg to ground provides 347 volts. Lighting ballasts, whether for fluorescent, metal halide or other types, are typically rated for 120V (single phase), "universal" (any voltage from 120V to 277V) or 347V (specifically for Canada).

Office lighting often runs on standard 120V line voltage, but medium and high-bay luminaires are often powered at 347V. Ballasts rated for 347V are less common and will often be more costly than their 120V or universal counterparts.

1881 Steeles Avenue West
Suite 340
Toronto, Ontario M3H 0A1

Phone: 416.418.2621
Fax: 416.946.1472
email: info@energylogix.ca

EnergyLogix Solutions Inc. is a specialized energy services company offering diagnostic services, complete project design and installation of advanced electrical energy conservation systems. We reduce losses in the electrical distribution system, and improve the efficiency of motor loads, refrigeration systems, air conditioning and lighting.

Unique in the industry, we offer an insured guarantee on energy savings, backed by an insurance policy underwritten by Lloyd's of London.

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Ontario Energy Prices Keep Going Up

Ontario's *Green Energy Act* may have noble intentions — to foster development of cleaner energy sources — but it won't come cheap. In fact, Ontario energy consumers could end up paying the highest energy prices in North America, for a system that will be heavily reliant on unreliable sources such as wind and solar.

At the end of last summer, Brad Duguid, Ontario's energy minister, declared that rate hikes will be necessary for the province's future clean energy supply. That was followed quickly by the Ontario Energy Board agreeing to rate hikes and profit increases for electricity distributors in the province.

The province's smart meter program has been rolling out to Ontario consumers, and recently the premier mused about raising the on-peak electricity price, to encourage more consumers to move their consumption to off-peak times — but was forced to back down when a backlash ensued. This won't be the end of it, however, as the government will have no choice but to push peak demand downwards due to a lack of baseline generation capacity.

Incentive programs to encourage conservation are continuing, and make sense, but the province shouldn't depend exclusively on these programs to gain generating "capacity". Instead, we have to anticipate future growth and build sufficient baseline and peak generating capacity to handle our future needs.

Will "smart meters" be enough?

In the next issue of *energytalk*:

Keep Your Electricity Bills Cool: Saving energy in your refrigeration and air conditioning systems