

Lighting



Lighting systems offer extraordinary opportunities for cost effective energy savings. In addition, many strategies for reducing lighting energy use often can improve the working environment and increase productivity as a result. In many industries such as manufacturing, high levels of lighting are required and lighting energy costs can be high, typically 50% or more of the electricity bill. In such industries lighting improvements can often be the largest energy saving potential available.

Lighting Systems Components

Power Source: Energy is provided to lighting systems through breaker panels and circuits. Circuits may be devoted to lighting or shared.

Controls: Controls determine when the lights are on and the amount of power consumed while operating. Examples of controls include: wall switches, timers, occupancy sensors, photo sensors and dimmers.

Ballast: Provides the starting voltage and regulates the current to gaseous discharge lamps like fluorescents. Ballast are either mains frequency or high frequency electronic type. Electronic ballasts use less power.

Lamp: Generates differing tints of light in various ways. Each type has its own starting and operating characteristics. Lamps vary a lot in efficiency and energy usage.

Fixture: A fixture or luminaire that holds the lamps and ballasts, connects the lamps to the power source, and distributes the light, sometimes using reflectors and lenses.

The most efficient lighting installations combine a mixture of all the above components to achieve the largest energy and maintenance savings and provide the best form of lighting for the tasks on hand.

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Energy Saving Opportunities in Lighting

- Take advantage of natural daylight whenever possible, while avoiding direct sunlight.
- Install appropriate controls for lights to ensure they are on only when required.
- Use high-efficiency fluorescent systems as the primary light source for most spaces. Many high frequency fittings also come with built in occupancy detectors and Lux control to enable the energy input to be modulated as light levels increase or decrease.
- Use compact fluorescent and incandescent sources where appropriate to “round out” the lighting system and provide visual variety.
- Use High-Intensity-Discharge (HID) systems (particularly metal halide) for outdoor and high-bay lighting.
- Use the newer high intensity fluorescent type fittings as an alternative to high intensity discharge lamps in low and high bay applications. ESBIE will advise you on the best options available. These fittings can typically save 50%-80% of lighting costs in these areas.
- Use time switching or connect lights to a building management system to ensure lights are off when not required.
- Occupancy detectors provide a good form of control in office and low occupancy areas such as toilets, changing rooms etc.
- Control lights in areas provided with natural lights on Lux sensors. Areas such as canteens, stores, and corridors provide good opportunities.
- High efficiency discharge lamps are best suited for outside lighting duty. They should always be put on low Lux photocells if they are required to operate all night or on timers and photocell combination if they only operate for a portion of the night.
- Plant rooms and other such places should have push button lighting control with switch/key override for long maintenance periods. For safety a couple of low energy fluorescents should always be operating.
- Voltage reduction systems can be used to save on energy usage in fluorescent lighting installation and can also be used for some discharge lamps. A 10% reduction in voltage can save 20% of energy with only a 20% reduction in light output.

ESB Independent Energy has considerable expertise in the efficient utilisation of Lighting Systems. If you require further information please contact your Customer Relationship Manager or ESBIE Head Office at 00 353 1 8628300.