



Facts About Dimming HID Lighting

High Intensity Discharge Lighting (HID) is the type of lighting most commonly used to illuminate large parking areas, industrial plants, convention centers, sports arenas, etc. The 3 types of HID lighting are metal halide, high-pressure sodium, and mercury vapor.

HID lamps have a high 'efficacy', or energy efficiency. For example, a standard household 100 watt incandescent bulb has an efficacy of 17 lumens per watt, where an HID light has an efficacy of between 30 to 150 lumens per watt. Hence, their widespread appeal where large quantities of light are required. (Lumens is the measure of actual light output.)

HID lights require a warm-up period before they reach full brightness. When shut off, they must cool down before they can be restarted, and then must warm up again to reach full output. The time required for the lamp to re-start is called the restrike time and can be anywhere from 5 to 20 minutes.

It is this restrike characteristic that makes dimming a very attractive alternative to turning the lights off when not in use, and then having to wait a considerable time for them to warm up again. An example would be an indoor tennis court area where a court might not be in use at any particular time. It is expensive to leave the lights on, but the wait required for full power makes 1/4 of the court hour unusable. Dimming, however allows the court owner to save 40% of his energy while the court is not in use, still have plenty of light to see for maintenance or clean up, and the ability to bring the court up to full brightness in minutes. This same thinking applies to supermarkets, malls, warehouses, and factory applications.

Dimming is particularly suitable to parking lot applications. Lights can operate at higher brightness during the primary hours of use, then be dimmed to lower settings to provide uniform security lighting all night.

The advantages of dimming include energy savings, reductions in peak power demand, and enhanced flexibility for multi-use spaces. A dimming system for HID lights will save energy because the lights are dimmed by reducing their input voltage. Further energy savings may result from reduced demand on the air conditioning system because the lighting heat output is reduced.

When dimming systems are used to reduce the power consumed by lighting systems during peak power demand, additional savings can result from a reduction of the demand charges from the electric utility.



Lamp manufacturers recommend that HID lights not be dimmed below 50% of the rated voltage to avoid a reduction in lamp efficacy. Of the three HID lamp types, metal halide lamps are most susceptible to changes in color characteristics when dimmed. However, lamp manufacturers state that the change in correlated color temperature (CCT) is slight so long as the light is not dimmed below 60% of rated of rated voltage.

For these reasons the LightBoss® has been designed to limit voltage reductions to 60% of the rated voltage. This maintains the lamps efficacy and color characteristics. By limiting the reduction to 60%, bulb and ballast life are lengthened thus offering additional savings in bulb replacement costs and expensive bulb replacement labor costs.

Slight dimming of HID lighting, up to 15%, is not noticeable to the human eye. With the exception of extremely light sensitive applications such as hospital operating rooms or precision assembly work, virtually every application can be dimmed 15%, not be noticeable, and energy savings will be realized continuously.

Dimming can be controlled manually, with occupancy sensors, photocells, day/hour timers, or several of these in combination. Dimming also can be controlled by zones or circuits, thus offering *flexibility to accommodate varying workplace needs.*

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