

ECO-SHIFT POWER CORP.

Ten Reasons to Retrofit

Energy Savings:

In today's market, energy cost savings are probably the number one reason for business owners and facility managers to consider upgrading from inefficient magnetic ballast HID (High intensity discharge fixtures) type lighting. HID magnetic Ballasts were the fixtures of choice for more than 30 years and still continue to be installed in new construction because architects, engineers, and end users have either not been aware of the long term costs associated with Magnetic Ballasts fixtures or simply did not care by focusing only on the initial fixture costs. A typical retrofit project replacing existing Magnetic HID Ballast fixtures with energy-efficient Electronic HID Ballast fixtures can pay for themselves in under 2 years leading to significant long term savings for the company. A simple energy analysis comparing existing lighting to the proposed lighting can be done showing the net positive cash flow and ROI (return on Investment) expected over set time periods.

Improved Lighting Quality:

Workplace lighting is the least expensive and most important component influencing work place performance. This fact has been documented in numerous studies conducted by colleges and universities, private industry and federal governments around the globe. Numerous case histories illustrate dramatic increases in worker productivity when lighting is improved and equally dramatic worker productivity drop offs when lighting is downgraded. High workplace productivity is essential for the survival of just about every business and leads to an increased competitive edge and long term financial stability for the firm involved. HID Electronic Ballast fixtures combined with Full Spectrum HID lamps feature the highest color rendering of any fixture on the market with a natural kelvin color temperature far exceeding any Magnetic ballast on the market. Full Spectrum HID lamps with their enhanced Scotopic qualities have been shown to increase contrast recognition leading to lower error rates, increased safety and improved energy levels in a work environment. Improved quality has also lead to a significant increase in sales in retail spaces.

Improved Lumen Maintenance:

The Achilles heel of Magnetic HID Ballast lighting is its poor lumen maintenance. The amount of light output produced by an HID lamp decreases dramatically with age. Standard metal halide lamps lose on average 55% of their lumen output by the time they reach their "rated lamp life". It is not uncommon to find HID lamps still operating well beyond their rated life producing only 15-25% of their original lumens. The newer style pulse-start lamps fair a little better by retaining around 57% of their lumens at end of lamp life. Regardless of how dim the HID lamps get over time they will still use the same amount of electricity as when they were new. If a building owner were to request a set level of light at the work plane they will only get that light level for the first few thousand hours of operation, after which time the facility will be perpetually under lit, and usually the lamp depreciation will go unnoticed until long after the lighting contractor is gone. Compare this lumen loss to Electronic HID Ballast that retains 98% to 95% of their light output over their rated life of 30,000 hours

Increased Light Output:

A 250 watt HID Electronic Ballast high bay fixture will produce approximately 20% more light output than a 400 watt metal halide fixture while consuming only 55% of the power. This is largely because of the improved fixture efficiency that can be achieved with a Prismatic ReflexorTM fixture. In a standard bell shaped aluminum Spun metal halide fixture only 70% of the light produced by the bulb escapes the fixture with the rest being trapped and lost inside of the aluminum spun reflector itself. An Acrylic Prismatic Reflector fixture features the ability of the light to escape upwards and outwards reflecting off the ceiling and walls. This creates a fixture efficiency of 98% meaning almost all of the light produced by the lamp leaves the fixture to provide illumination at the work plane. More light is delivered to the desired location. This also dramatically reduces the cave effect that is prominent in the aluminum spun reflector.



Reduced Energy through Dimming:

For the first time in History an HID fixture can now be dimmed with linear savings to the wattage verses the lumens it produces using an HID Electronic Ballast. In the past there have been many attempts to dim the Magnetic ballast with multiple stage capacitors. This dimming to the surprise of many of the users saved little if any energy and dramatically reduces the lamp life creating higher maintenance costs to the customer.

Hot Re-Strike:

All HID bulbs when shut off must cool in order to be restarted. This time is typically for a Magnetic Ballast a minimum of 10-15 minutes making it difficult, if not impossible, to use occupancy sensors or even simply change a burnt out bulb quickly. An Electronic Ballast has a restrike time of 2 to 4 minutes for the lamps to re-start and can easily accommodate occupancy or daylight sensors by using the dimming functionality with the energy savings linear to the reduced wattage used.

No Stroboscopic Effect:

The arc in HID lamps operated by a magnetic ballast is on a 60Hz system meaning that the light output is modulated at 60 times per second. This rapid variation in light output creates what is known as stroboscopic effect. Because of the stroboscopic effect an object, such as a drill or grinding wheel, that is moving at a uniform speed may appear to move in jerks, standing still, or even moving in the opposite direction creating additional safety concerns. An HID Electronic Ballast fixture operates on a 20,000Hz plus system by employing Electronic Ballasts removing any possibility of stroboscopic effects and their consequences.

Fire Risks:

Magnetic HID Ballast lamp arc tube ruptures have been known to cause fires in warehouses and industrial applications. The National Electrical Manufacturing Association (NEMA) recommends that HID lights be switched off for 15-minute periods because the periodic cycling of the lamp, and the subsequent cooling and heating of the arc tube, allows for cracks to propagate while the internal arc tube pressure is low preventing a violent failure and fire (the bulb will burst during start up). In addition NEMA advise customers not to store flammable, combustible, or oxidizing materials beneath any Magnetic HID luminaries. Electronic HID Ballast fixtures have the capability of controlling the Arc so that the internal arc tube is controlled at the optimum temperature thus illuminating these risks.

Maintenance and installation Savings:

A 1000 watt magnetic ballast weighs up to 42 pounds verses 7.5 pounds for an Electronic Ballast making it safer and cheaper to replace. The Electronic HID Ballast allows for the lamp life to more than double compared to the same lamp in a Magnetic HID Ballast. The Maintenance and business interruption savings is substantial over the 30,000 hour lamp life in Electronic HID Ballast. One large drawback of the HID Magnetic systems is that they must be turned off to replace the bulb resulting in maintenance having to work after hours or alternatively shutting down a whole circuit of lighting to simply replace a lamp creating a business interruption. The Electronic HID Ballast has a built in Shut off disconnecting the power so the Bank of lights do not have to be shut off in order to re-lamp or replace a lamp.

Tax Savings / Energy Rebates:

In Canada each Province has incentive programs for reducing a company's peak demand usage and will compensate a retrofit installation from \$150.00 per Kilowatt saved up to \$1,000 dollars per Kilowatt saved depending on the utilities existing rebates and incentives. For more information visit or contact your local Utility. The USA Energy Policy Act of 2005 signed in August of 2005 created tax incentives designed to encourage business owners to improve energy efficiency of new and existing buildings. An accelerated tax deduction is now available for lighting systems that meet energy efficiency standards by calculating the power density (watts/sq. ft.) of a facility. Under the act, the facility owner or renter can write off up to \$0.60 per square foot of facility using energy-efficient lighting in the same year as the lighting was installed. This is a dramatic improvement over prior treatment which required lighting system costs to be depreciated over the life of the building which was typically 37.5 years

