



WORK-BRIGHT™

Five yellow, cone-shaped light fixtures are positioned below the 'WORK-BRIGHT' text, with one under each letter of 'BRIGHT' and one under the hyphen.

LIGHTING FOR WAREHOUSES

Overview –

Lighting constitutes a higher proportion of energy overheads for warehouses than for other building structures. In fact, for unconditioned space that does not have HVAC, lighting is essentially the only electrical overhead. Recently, facility managers have been faced with several lighting challenges. Notably, the “Green Movement” has raised the issue of energy efficiency for all types of leased or owner operated space. Regardless of whether electricity is a direct expense or pass-through, tenants are seeking efficiency to comply with “Green” objectives as well as reducing costs. Although efficiency is the primary motivating factor, lighting quality should be an equally important consideration. Many new lighting technologies like light emitting diodes (LEDs) and higher efficiency fluorescents (T5 and T8) carry risks and drawbacks. Tesla Induction Lighting™ Co has introduced a line of high efficiency magnetic induction fixtures (MIL) that provides higher quality lighting with a longer *proven* lifecycle. The results are greater efficiency, lower maintenance costs, higher human performance, and greater safety.

Lighting Options –

Most warehouses use metal halide high-bay or standard 8-foot 2 x 2 and 4 x 4 T12 fluorescent fixtures. Typical lifecycles for metal halide range from 2,000 to 6,000 hours and for fluorescent from 900 to 1,600 hours. Both technologies lose approximately 20% to 30% of their lumen output within the first third of their lifecycles. Neither metal halide nor older fluorescent lighting is energy efficient. Both suffer from spectral deficiencies.

Alternatives to older lighting include LEDs and more efficient fluorescent fixtures. LEDs are becoming increasingly popular and pricing is coming down as the technology advances and sales increase. However, LEDs suffer from several drawbacks that include harmful light emissions that can damage the eye when directly viewed, ultraviolet and blue spectral bias, and flicker or “strobe effect.” In addition, LEDs also lose 20% and more of their lumen output within the first third of their lifecycle. LED lifecycles are rated between 15,000 and 50,000 hours which is considerably longer than metal halide or fluorescent.

New T5 and T8 higher efficiency fluorescent lighting is generally less expensive than LEDs for the initial install, but lifecycle costs are higher due to the shorter rating. Like LEDs, fluorescent bulbs have ultraviolet and blue spectral bias along with flicker. The bulbs have dispersed liquid mercury that has been categorized as hazardous material (“haz-mats”) which require special disposal. If a fluorescent bulb is broken within a work environment, EPA, OSHA, DEP, and DEC regulations require haz-mat clean-up procedures. Penalties for improper disposal can be staggering... up to \$10,000 per day for non-remediated mercury.

Tesla Induction Lighting has introduced a line of full spectrum magnetic induction fixtures that solve the problems of LED and fluorescent technologies. Magnetic induction lighting (MIL) was patented by renowned inventor Nikola Tesla in 1891. It was called the “Forever Bulb” because there are no filaments or electrodes to burn out. The lights use a magnetic field to spin atoms and generate light. The modern version of MIL uses sophisticated phosphorous coatings to generate highly tuned spectral output that concentrates light within the visually effective range of human vision. This is known as “visually effective lumens” (VEL). This means that less light intensity can provide better visual acuity than with metal halide, LEDs, or fluorescent. The rated lifecycle is 100,000 hours and lumen output remains within 90% for over 90% of the bulb’s operation.

MIL fixtures can be directly viewed without danger to the eye. There is no dispersed mercury. Bulbs use a mercury amalgam similar to the fillings for teeth. The encapsulated mercury will not disperse if the bulb is broken and it can easily be recovered for recycling. No haz-mat treatment is necessary.

Advantages include:

- ◆ 85% energy efficiency compared with metal halide
- ◆ Longest lifecycle of any lighting with up to 600% reduction in maintenance
- ◆ Safer light that can increase human performance from 5% to 20%; flicker-free
- ◆ Environmentally friendly; no haz-mats, less waste

The Economics –

For owner/operators, upgrading to Work-Bright™ fixtures provides instant savings that can be shared with lease tenants on gross leases or used as incentives for net leases. For long-term lessees with direct metering, savings translate straight to the bottom line in lower electricity and maintenance costs. Since MIL fixtures have negligible in-rush current, they can lower electricity demand charges as well as kilowatt usage. There is no better way to “Go Green” for warehouse lighting than converting to Tesla Induction Lighting Work-Bright™ lamps.

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