

Productive Lighting on the Shop Floor

Lighting management and maintenance program increases morale and productivity

Lighting can have a powerful impact on the human body. In addition to enhancing vision and reducing eyestrain, lighting stimulates hormones to decrease fatigue, increase alertness and elevate your mood. For these reasons, lighting also has a strong correlation with worker productivity. Studies have proven that proper lighting in production facilities can affect many aspects of a worker's experience, including reduction of illness, accidents, and even absenteeism.

Regular lighting maintenance is essential to ensure that facilities receive the desired quantity and quality of light, as well as energy efficiency from their lighting systems. Beside increasing productivity, periodic maintenance can produce a range of benefits, including a brighter and cleaner workplace, as well as a higher level of security.

MRS Industrial Improves Illumination

Founded in 1997, MRS Industrial specializes in all types of fabrication and installation work, design-build to specifications or from concept to completion. The Columbus, Ohio-based facility includes two buildings that are connected in the middle. The buildings are 80' X 375' and 80' X 325' with a 20' ceiling height. Through its lighting management and maintenance program, regular lamp replacement of its T8, six-lamp, high-bay fixtures had become a popular choice to maximize lighting system effectiveness and control costs. However, the current lamps were no longer producing the appropriate lumens levels needed for productivity.

With its stringent and intricate manufacturing processes, MRS Industrial knew that the proper use of lighting could lessen the fatigue, production errors, and accidents—especially among nightshift workers or those on rotating shifts. With that the current lighting system no longer providing the needed illumination, the company determined it was time to update the lighting in the two buildings.

“We offer a wide range of mechanical services to many businesses nationwide. If you can dream it, we can build it,” said Scott Cosgrove, President at MRS Industrial. “So, we need to make sure our work force has proper lighting during manufacturing. Visual acuity for optimal lighting is extremely important to our productivity.”

Strategy to Maximize Lighting

To improve the illumination, MRS Industrial needed to determine the best relamping strategy that fit their facilities' needs. MRS Industrial wanted to upgrade the current T8 fixtures with high efficiency LEDs. To determine the best products for the retrofit, MRS Industrial met Bill Liberto, Regional Sales Manager for EarthTronics, Inc. EarthTronics, Inc. manufactures a wide range of energy saving long life LED lighting products for commercial and industrial applications. Liberto met with Scott Cosgrove and reviewed the many options available to them to both reduce energy consumption and maintenance costs while increasing illumination levels at key points throughout MRS Industrial manufacturing processes.

“We assessed the wattage of lights over workstations, checked for burned-out bulbs, and even determined that the lighting fixtures were dusted and cleaned to evaluate our lighting needs,” said Cosgrove.

The team established three major criteria to replace the T8 fixtures. First, the new lighting system had to provide better efficiency in delivering lumens. Second, the team wanted to increase footcandles on the floor. Finally, the fixtures had to be more cost efficient.

As part of the process, the team worked with Bill Liberto at EarthTronics, who recommended a photometric fixture offering. Liberto was put in touch with Doug Peterman, electrical owner of MCE, and salesman PJ White from Professional Electrical Product Company (PEPCO) Columbus, a premier electrical solutions distributor and packager, offering a full line of quality products, support personnel, and expert services. Liberto worked in conjunction with PEPCO and Peterman to optimize the lighting fixtures photometrics.

After a thorough investigation, the team specified 320-watt Linear Highbay LEDs from EarthTronics in the high-bay areas in the two facilities. Suitable for damp locations, the Linear Highbay LEDs feature a 5000K color temperature with a high 84 CRI to provide excellent visual acuity and illumination. They deliver excellent energy savings compared to similar linear fluorescent and HID fixtures. In fact, the lightweight, compact-designed fixtures deliver more than 50 percent energy savings and boast a rated performance life of up to 100,000 hours.

“We learned that the Linear Highbay LED fixtures focus light more directly, creating strong and long-range illumination for use in manufacturing and warehouses,” said Cosgrove. “These high-bay LEDs would enhance workplace productivity by improving both visibility and safety.

For lower ceiling areas, the team specified 105-watt Linear Highbay LEDs also from EarthTronics. Both the 320- and 105-watt high-bay fixtures deliver 150 lumens per watt, operate on 120/277VAC, 50-60Hz, and feature an integral LED lens constructed from PMMA that provides even illumination across the face of the high bay. The fixtures also offer 0-10V dimming capability.

Results on the Shop Floor

MRS Industrial installed 75 of the 320-watt high bay LED fixtures in the high-bay areas, and another 15 of the 105-watt fixtures on lower ceiling areas. The result of the new lighting system was dramatic on the shop floor. Light levels went from 12 footcandles to over 52 footcandles—more than quadrupling the light levels around key areas in the buildings.

More important, Cosgrove said, “The shop workers love how bright their work environment is now. We have noticed that the lighting has helped improve morale throughout the two buildings. In addition, we determined that the linear high bays fit nicely into our lighting management and maintenance program. Their next schedule relamping at 70 percent of the rated 100,000-hour lamp life will allow us to keep producing without disrupting productivity for a long time.”

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