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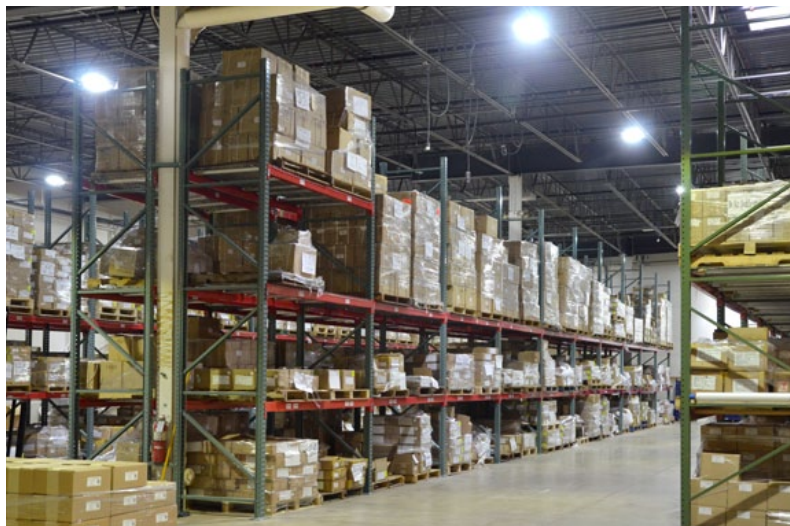
TRP In Action: LED Driver Application Story

LED Drives Savings in Manufacturing & Distribution Lighting

What do you do when you move your manufacturing and main distribution center into a new facility, and your business is built on providing key components to LED lighting OEMs? Put your money where your mouth is!

Thomas Research Products is a leading provider of LED drivers in North America, along with LED light engines, lighting surge protectors, and energy-saving lighting controls. The company's main distribution center is at their corporate headquarters, where they maintain one of the larger inventories in the country. The facility also houses the main production line for many of their controls, including their popular lighting surge protector products.

When TRP prepared to move into a larger 48,000 square foot facility in Elgin, Illinois in the spring of 2014, the move presented an opportunity to relight the facility with LED luminaires. The existing lighting in the manufacturing, warehouse and shipping areas consisted of metal halide high bay fixtures. Each luminaire, almost 20 years old, consumed 458 watts, which meant that a lot of energy dollars were spent on lighting the space.



Project Goals

Vice President Greg Andrews started looking at options to change out the old HID lighting. He had experience overseeing a lighting overhaul at TRP's previous facility three years earlier. He began by measuring the existing light in the Elgin facility before the company took possession of the building. The quality of the light reaching the floor was low, with very uneven distribution. His primary goals for the project would be maximizing energy savings, increasing light levels and improving the distribution of the light, while reducing maintenance requirements.

Greg could have gone with a fluorescent high bay solution. At 218 watts per fixture, that would have saved 240 watts each. However, that was not as effective as an LED solution. One of TRP's customers is Precision-Paragon Lighting [P2], located in Yorba Linda, California. Joe Martin, General Manager at [P2], suggested Greg consider their QHC series LED high bay luminaire. It uses only 132 watts, which would mean saving over 325 watts per fixture!

A Fixture That Measures Up

The QHC fixture with 60 LED chips provides 12,483 lumens, over 94 lumens per watt. The color temperature of the LED set is 5100K, close to natural daylight. The light-weight, compact housing is designed for simplified installation and maintenance, with heat management engineered into the exterior. This design provides for long life, with a L95 (95% lumen maintenance) of greater than 60,000 hours. Since the manufacturing area in the facility will end up running two shifts, this means these fixtures will operate over 7 years with no visible degradation in light levels.



The luminaire utilizes a 150W LED driver from TRP. The company's high performance drivers feature universal voltage input, operating on 100-277V mains. Therefore no step-down transformer was needed to connect to the existing 277V circuits.

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Making Sense of Occupancy

However, Greg was conscious of even greater energy savings potential. "The best way to save money is to turn them off! So we chose to use the best occupancy sensors money can buy." The QHC high-bay design accepts an optional occupancy sensor directly on the fixture, the WASP2 high-mount occupancy sensor from Hubbell Building Automation. This lighting control uses passive infrared technology to provide simple on/off control, and includes a daylight sensor for when there is sufficient natural light. Greg chose to have the WASP2 installed on each fixture.

Early on, some people questioned installing occupancy sensors on the luminaires in manufacturing. Greg was not concerned because of the company's previous retrofit experience. He knew that people move enough during production that the lights stay on as needed.

The sensors switch the fixtures off and on more often in the warehouse, where there are less people working.



Optics

Because the LED luminaires would be used in areas with very different functions, Greg chose optics appropriate for each area. For 30 fixtures in the warehouse, an "aisle lighter" optic was installed. This asymmetric lens design provides higher vertical footcandles and more uniform light throw down the aisles of racking. For the fixtures to be installed in manufacturing and shipping, an open area optic provides maximum 360 degree area coverage. Both lens options on the QHC are Design Lights Consortium (DLC) listed.

Rebates Save

Elgin Illinois electrical needs are served by Chicago-based Commonwealth Edison. The utility offers rebates for commercial customers, which made the retrofit installation financially attractive as well. The high efficiency of the chosen fixture qualified for an incentive of \$0.50 per watt reduced. The occupancy sensors also qualified for an additional incentive, \$0.12 per watt controlled by the devices.

Results

In total, 100 LED luminaires were used in a 1 for 1 replacement of the original HID. The units were mounted at 20 feet above the floor, lighting almost 35,000 square feet of the building. Light levels were now double the original measurements. The distribution of the light was also much more uniform. Although the design of the QHC fixture does not provide any uplight, having the walls painted provided enough reflectivity to prevent the ceiling from being too dark. In the manufacturing area, the floor and ceiling were also painted, providing additional reflectivity. The building already had a number of skylights in both key areas, so daylight also provides light during primary business hours.



The results of the project have been well received by employees and visitors. "Yes, I'm pleased," Greg said. "It's amazing how far the technology has come." For this LED Driver manufacturer, the move not only provided an opportunity to save energy and improve the quality of the light, but it also created a great showcase for their own product.