



Monsanto Completes Company's First All-LED Retrofit with Integrated Lighting and Controls Solution

DETAILS

Project:

Grinnell Production Facility, Monsanto; Grinnell, Iowa

Lighting Manufacturers:

Acuity Brands®, Holophane®

Products:

Phuzion™ LED High Bay (PHZ)

The Challenge

Monsanto is a St. Louis-based sustainable agriculture company that supports farmers all around the world with leading seed brands in crops – such as corn, soybeans, cotton and vegetables. While the company helps farmers be more sustainable through conserving natural resources such as water and energy, it also wants its own footprint to be one of conservation.

Monsanto has locations in 33 states in the U.S. – and even more around the world. Locations feature a range of structures including administrative and sales offices, manufacturing plants, seed production facilities, research centers and learning centers. In 2014, the company began searching for fixtures that could be

used throughout its facilities to upgrade outdated high intensity discharge (HID) lighting.

The company set out to investigate new technologies, and selected a production site located in Grinnell, Iowa for the initial facility in August 2014. Two of the manufacturing facility's industrial spaces were equipped with aging 440-watt metal-halide lighting that was no longer meeting performance standards. The quality of lighting and efficiencies were both diminishing, challenging Monsanto facilities staff to meet sustainability goals.

Additionally, the fixtures' performance varied greatly depending on temperature. When operating in the cold weather, the

fixtures were not able to provide the full lighting output needed to illuminate the facility properly.

At the Grinnell facility, the corn is husked, treated, conditioned and packaged onsite. Bulk storage bins line the production facility and can be stacked as high as 15 feet, which blocks lighting in the area. The new fixtures needed to provide higher illumination levels to combat lighting uniformity issues and dark spots throughout the aisles.

While there were a lot of challenges the new lighting needed to address, minimizing safety risks was one of the key reasons for the upgrade. Forklift operators need good quality lighting all the time to perform their jobs safely.

“Increased safety was one of the driving factors in the decision to upgrade lighting,” said Mike Holliday, Professional Engineer, Monsanto. “Before, when staff would enter the warehouse from other areas of the facility, such as the packaging area, the lighting differences were so extreme it would take a while for eyes to adjust – which could potentially lead to safety hazards.”

The Solution:

Finding the Right Fit

Monsanto began exploring both HID and LED lighting solutions to identify the best fit for the Grinnell site. Ultimately, the facility decided on LED lighting because of the performance and payback benefits – including extended life and increased light output.

“We pushed for LEDs in the new installation,” said Philip Niemerg, Electrical Engineer, Monsanto. “While



they are more costly than metal-halide fixtures up front, we expect a payback within five years and from then on it will all be savings.”

Because Monsanto was seeking a universal solution to use in multiple plants operating at different temperatures, it also needed a fixture that could withstand changes in temperature without a decrease in performance. The ability to perform in the cold is a key advantage of LED lighting as opposed to HID lighting.

Monsanto turned to Acuity Brands for the lighting needs. One hundred thirty five Phuzion™ LED high bay fixtures from Holophane were installed in the first facility, along with 112 additional Phuzion LED high bays in the second.

“The Phuzion LEDs are perfect for our facility because they have a longer life,

higher output and they are not affected by the cold,” said Niemerg. “Another benefit is for our other facilities that work with chemicals, we can order different lenses on the fixtures, so we can easily wash them down. It’s a versatile option for us.”

The Phuzion LED high bays incorporate occupancy sensors to further contribute to energy savings. “We were pleasantly surprised with the functionality of the occupancy sensors,” said Niemerg. The fixtures turn on within 15 to 20 feet of proximity.



The Result:

A Universal Lighting Solution

Reactions to the installation have been overwhelmingly positive. Due to the increased light levels, the safety issues present before the installation have been eliminated.

“The forklift operators agree it’s a night and day change,” said Niemerg. “Before, their eyes took much more time to adjust upon entering and exiting the facility. Now, visual comfort has increased, which is reducing safety hazards as well.”

The new LED lighting saves the facility 190-watts per fixture compared to the previous metal-halides. Because the fixtures have a quicker start-up time and are now controlled by occupancy sensors, energy usage is further reduced as the facility is not illuminated 24 hours a day.

“Employees would turn on the metal-halide lights and be reluctant to turn them off because it took so long for them to start-up,” said Holliday. “Now, that’s no longer an issue since the Phuzion LED high bays have instant-on capabilities.”

The success of the Grinnell project – the first application of its kind for the Monsanto corporation – has inspired other facility managers within the company to follow suit with a variation of the same LED lighting and controls solution. The company plans to conduct a warehouse lighting study in all facilities to determine lighting levels and prioritize future lighting upgrades.

Phuzion™ LED High Bays from Holophane®:

The Phuzion LED high bay incorporates the latest in LED technology with the illuminating dynamics of prismatic borosilicate glass from Holophane — high-impact strength, precise optical control and optional frosted lens for glare control. Available in 12,000 to 48,000 lumens, the Phuzion LED high bay provides unprecedented light levels at temperatures up to 65°C – making it ideal for heavy industrial, manufacturing and sports-related facilities.

The precisely engineered design promotes natural airflow to pull heat away from sensitive electrical components while the robust aluminum construction provides extensive thermal conductivity and ensures strong light output. Embedded controls sense occupancy and daylight to provide additional energy savings.



Additional features include:

- Two distributions - narrow and wide - to maximize versatility
- 0-10V dimming driver
- Driver housing can be remote mounted up to 50’ away for greater thermal protection
- Fault-tolerant LED light engine continues to provide light even in the failure of one LED