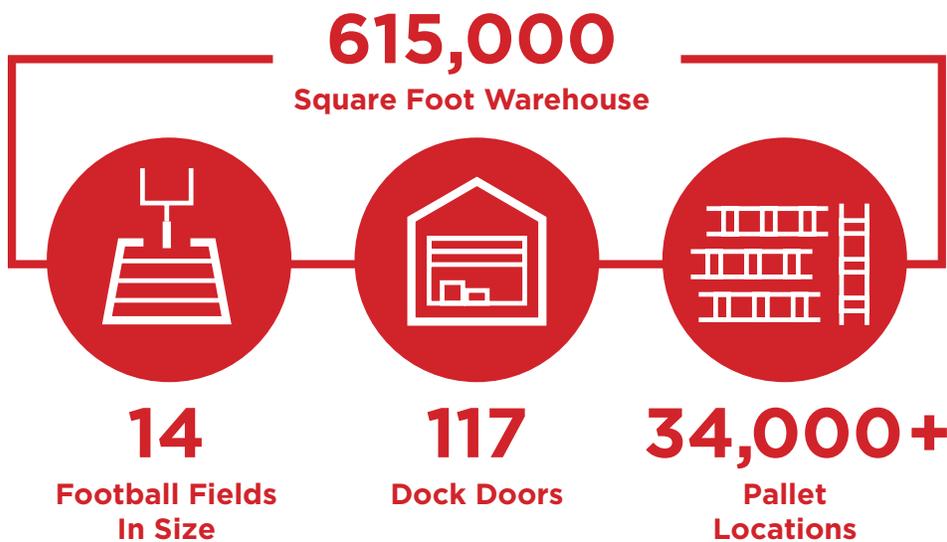


New Lighting and Wireless Controls Cut Warehouse's Lighting Energy Costs By 75%

enlighted[™]
A Siemens Company

Situation

Veeco Services, a leading, full-service logistics provider, boasts a 615,000 square foot warehouse in North Bergen, NJ. More than 14 football fields in size, Veeco's warehouse is equipped with 117 dock doors and 34,000+ pallet locations, and the operation is unrivaled in speed and accuracy. The sheer amount of space and the company's commitment to efficiency make Veeco's lighting and lighting controls critical to employee safety and profitability.



Although Veeco's warehouse team was working as efficiently as ever, it became clear there were a variety of challenges with the warehouse lighting after National E Solution (NES), an energy management company and Enlighted partner, conducted a lighting audit in January 2019. The current high-intensity discharge (HID) fixtures were not only emitting poor lighting levels, but they were wasting energy and expensive to maintain. Additionally, Veeco upgraded to a new racking system that added more rows and narrow aisles.

Time to Revamp and Retrofit

The old lighting included 366 HID and fluorescent lighting fixtures throughout the aisles that drew a 150,825-watt load. Based on the warehouses operating hours, the lighting was using 1,062,500 kWh annually to deliver poor lighting levels. Veeco's warehouse lighting system was not working as safely and efficiently as it could. It was time to revamp and retrofit.



Tackling The Warehouse Redesign

Solution

National E Solution planned to redesign the lighting for the new aisles to improve foot-candles and the quality of lighting while reducing the operating cost and maintenance. The lighting design was based on a detailed photometric study of the new aisles and loading dock area. To achieve optimal lighting levels, National E Solution selected 168-watt high bay LEDs that produced 23,000 lumens each with a color temperature of 5000 Kelvin. The new aisle lighting was created to achieve lighting levels that met the Illumination Engineering Society minimum standard for this work application. The customer's target was an average of 25- to 30-foot candles.

"The new design gave us the ability to space the new fixtures as far apart as possible and still achieve the ambient lighting level results we wanted, reducing the total number of LED fixtures needed," said Sizer. "But that's not all. It was critical to the success of this project that we installed a high-quality lighting control system. We selected Enlighted's wireless lighting control and IoT technology to further support the needs of the warehouse and maximize energy savings."

Each light fixture was equipped with an Enlighted smart sensor. Built on the leading Internet of Things (IoT) architecture, the Enlighted system consists of a network of patented sensors, connected to an advanced analytics platform. Data is collected 65 times per second to monitor environmental and occupancy changes and adjust lighting in real-time.

"With the Enlighted system, each fixture has its own address, allowing us to group fixtures as needed," shared Sizer. "For example, for safety reasons, when the Veeco staff is working in an aisle, we wanted the aisle behind that to be the backlight. The Enlighted system allowed us to accomplish this.

"Also because of the density of the Enlighted sensors, occupancy sensing is extremely accurate," explains Sizer. "This ensures only the lights that need to be on when employees are walking around the warehouse are and others are turned off or down. It allowed us to further reduce energy use and unnecessary wear and tear on the lighting fixtures."



Flexible lighting control was a huge benefit for Veeco. Its team was able to fine-tune the power output to the fixtures using the Enlighted control system. This allowed Veeco to reduce overall energy use and still achieve acceptable lighting levels. After a few trials, the team set the lighting system power load to 75 percent of the rated LED fixture load, which still provided excellent lighting for the warehouse crew. This reduced each fixture from a 168-watt load to 126-watts. Reducing the light output also extends the life of the LEDs and drivers far beyond the rated life on the specification sheet. Multiply the savings of 388 fixtures for 365 days and the Enlighted systems begins to deliver real dollars saved.

"We can group the fixtures and control them beyond a traditional on/off occupancy sensor. This allows for entire aisles to be lit only while in use for optimal savings and safety. And it's a huge plus the system is very easy to work with. **I can easily highlight the fixtures, make changes to the lighting groups and also update the lighting profiles.**"

Orlando Ortiz
Director of IT, Veeco

This highly advanced lighting controls system is intelligent, flexible and code compliant. "Another win for us is the ability to upgrade the Enlighted system and unlock additional IoT features like facility mapping and asset tracking," Ortiz explained. "While we are not using these features at the moment, we have the ability to upgrade when the time is right."



Results

After one year in operation, Veeco Services reduced its lighting energy load by 59 percent by merely converting to LED fixtures, even though the fixture quantity increased. By controlling the lighting with Enlighted's system, the facility achieved a 804,725 kWh savings for the year that resulted in reducing energy costs by \$122,318. That is a 75 percent total reduction in energy compared to the previous system. Additionally, Veeco will save an additional \$14,000 per year on annual lighting maintenance since LED fixtures do not need to be maintained like the old HID fixtures.

In the event of a power failure, National E Solution built a new emergency egress lighting plan into the system. This solution meets the National Electrical Code for egress lighting levels and allows employees enough time to access exits and evacuate safely. National E Solution's installations also resulted in increased visibility for forklift drivers and other workers. An average of 2 to 7 footcandles in the aisles were recorded before the project, and the results allow for up to 30 footcandles based on fixtures at full power.

This LED installation not only improved safety in terms of visibility for the Veeco employees but helped remove the fire risk caused by the old HID fixtures. The new LED fixtures operate at much cooler ambient temperatures, so there's no risk of them rupturing when fatigued.

Environmental Benefits

The new lighting and wireless control system reduced greenhouse gases and CO2 emissions by 554 metric ton, equivalent to removing 93 U.S. cars from the road annually.

The increased lighting level and 5000 Kelvin temperature helped to increase employee productivity and morale.

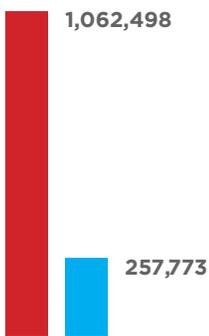
"From the lighting to the new controls system, we are extremely happy with the results," explained Richard Lynch, president and chief operating officer of Veeco. "We have increased the line of sight on the warehouse floor, which is critical to increasing efficiency and safety, and we have driven down energy costs significantly. Installing a future proof and upgradable IoT system gives us a lot of room to grow and further enhance employee satisfaction, safety and operational efficiencies down the road. It's been a huge win for us."



Results Visualized

■ HID - Old Lighting System
 ■ LED With Enlighted Controls

Annual kWh

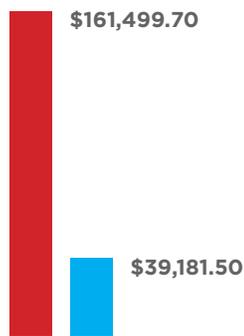


Difference

804,725 ▼

75.74%

Annual Energy Costs

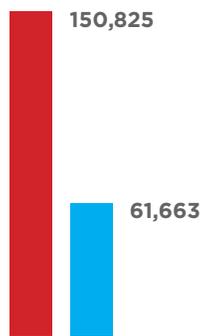


Difference

\$122,318.20 ▼

75.74%

System Watts

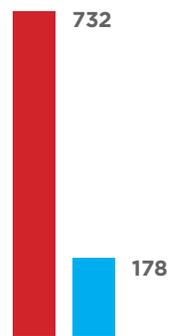


Difference

89,162

59.12%

CO2 Metric Tons Equivalent



Difference

554

75.16%

\$14,000 saved annually on lighting maintenance



For information about National E Solution turnkey projects, please contact Ray Delfing at **215.295.0800 x 104** or **raydelfing@nationalesolutions.com** or visit **www.nationalesolutions.com**.

For more information about Enlighted, please contact **sales@enlightedinc.com** or visit **www.enlightedinc.com**.

Courtney Holliday contributed to this story.