

Commercial Lighting Program

INDUSTRIAL LIGHTING SOLUTIONS THE RIGHT LIGHTSM IN DIVERSE INDUSTRIAL APPLICATIONS

What do a tissue manufacturing plant, a truck repair and maintenance shop, and a distribution center all have in common? Each of these industrial facilities found a solution to save energy and improve their lighting by working with **New York Energy \$martSM** Commercial Lighting Program (CLP) Business Partners. While each solution is different, the facilities collaborating with CLP Business Partners chose to use **The Right LightSM** – an effective, energy-efficient lighting system.

HIGH-OUTPUT T-5 LINEAR FLUORESCENTS FOR A WAREHOUSE AREA

Irving Tissue manufactures Scotties facial tissues at their Fort Edward facility. The company was looking for ways to reduce energy costs at the site. Kim Clark, Irving Tissue's Facilities Manager, invited Mitch Hall of ASKCO Electrical Supply Company, a CLP Business Partner Distributor in Glen Falls, for assistance. Together, they determined that the existing high pressure sodium (HPS) lighting system in the 15,000 square foot warehouse area could be replaced with a more efficient system.

One key problem was the height of the warehouse ceiling: at a height of 24 feet, the ceiling fixtures must be very powerful for light to reach the warehouse floor. While HPS systems are very efficient (based on lumens per Watt or lamp efficacy), the existing fixtures were not effective in providing enough light for the warehouse floor. Other challenges included minimizing glare for employees working in the space and providing uniform lighting to safely illuminate pallets of products that are constantly moved throughout the warehouse.



*Three-lamp T-5HO high bay fixtures ensure that warehouse floor is adequately lighted from 24 feet above.
Photo courtesy of Stonco Lighting*

The solution was to install new three-lamp, T-5HO linear fluorescent high-bay fixtures that not only yield the high lumen output needed at a higher efficacy than the old system, but also feature good glare control. The fixtures provide the proper

"Simply put, the new lighting is a lot better. Nobody has anything negative to say about it"

Kim Clark,
Irving Tissue,
Facility Manager

Project Profile

Type of Spaces
Manufacturing Repair
Distribution

Project Objective
Proper light levels with limited glare, improved color rendering, and reduced electricity costs.

Project Benefits
Employees can perform their work more productively and with fewer errors.
Electricity bills for lighting reduced significantly.

light level based on Illuminating Engineering Society (IES) recommendations (8 to 12 footcandles for a warehouse area), and the T-5HO system produces a more comfortable white light compared to HPS, making the space more pleasant for employees. The high color rendering ability of the T-5HO lamps (85 CRI compared to only 22 CRI for HPS) ensures that employees are better able to distinguish colors and identify package labels more easily.



Irving Tissue's warehouse area after installation of the new fixtures

By combining good uniform vertical and horizontal light levels with excellent color rendering, low glare, and energy-efficient fixtures, the new lighting system provides The Right LightSM – an effective, energy-efficient solution – for Irving Tissue. Employees working in the space can now read the fine print on the labels more easily and all agree that the lighting is comfortable and better than the previous system. Kim Clark reports that Irving Tissue is considering future projects such as the addition of occupancy sensors to increase energy efficiency, something that could not be accomplished with the old HPS fixtures. “Simply put, the new lighting is a lot better.” Clark states.

Using the CLP Life Cycle Cost Analysis tool, ASKCO was able to show Irving the long-term cost-effectiveness of the new system.

IRVING TISSUE: BOTTOM LINE

The new fixtures have a much higher efficiency and can deliver more light with less lumens and lower wattage. They also have greater ability to provide sufficient light to the warehouse floor where it is needed. At about 162 Watts per fixture, the total wattage of the system is only about 0.22 Watts per square foot. Compared to a typical warehouse area at 3.0 Watts per square foot, Irving Tissue will save over \$17,000 per year in energy costs. And, at the low cost of about \$0.20 per square foot for materials, Irving Tissue will see a quick return on their investment.

TAKEN TO TASK

R.J. Valente Transport does in-house heavy vehicle service work for their sister company R.J. Valente Sand and Gravel. When they recently moved their repair and maintenance facility into an existing 5,600 square foot building in Albany, they quickly realized the need to upgrade the lighting. The existing T-12HO strip fixtures located at the 16-foot ceiling simply did not deliver the amount of light needed to efficiently work on their vehicles. R.J. Valente contacted John Maloney of LaCorte Companies, a CLP Contractor Business Partner in Troy for help.



T-8 linear fluorescent high-bay fixture provides light from the 16-foot ceiling.

Photo courtesy of Ruud Lighting

Together, they determined the challenges, including getting enough light from the ceiling to where it is needed to perform vehicle work while minimizing glare and providing good color rendering. The Right LightSM solution: four-lamp, T-8 linear fluorescent high-bay fixtures that offered many advantages over the old system. The 16-foot ceiling height made T-8 fixtures a logical solution because they could deliver sufficient light with a limited number of lamps and also provide the necessary glare control.

The work bay set up of the shop floor, typical of automotive repair facilities, requires task lighting only around the vehicle – not general lighting. Hand held task lights provide employees with additional lighting when needed. The new linear fluorescent fixtures distribute the light where it is needed: on the sides of the vehicle. At the same time, the system provides enough light on the floor for employees to find that missing screw or misplaced tool, and meets the IES recommendations of about 30 footcandles for an industrial area. The T-8 lamps have a good color rendering index of 78, rendering colors more naturally and making it easier for mechanics to match color-coded wires.

LaCorte's solution combined good vertical light levels, good color rendering, low glare, and energy-efficient fixtures. Employees working in the space can now perform their tasks more efficiently – and the majority feels the lighting is much better than in other shops where they have worked. Shop Foreman, Dave Marotta, noted, “I see noticeably brighter light levels here than other forms of lighting, despite the dirty environment of a repair shop.” Mechanic Harry McGraw, who worked under the old lighting system says, “The new lights and layout help us see much better than before without any glare problems.”

R.J. VALENTE TRANSPORT: BOTTOM LINE

The combination of T-8 lamps with a very efficient lighting fixture provides a good energy-efficient solution: about 0.37 Watts per square foot, significantly more efficient than the typical 2.5 Watts per square foot for other low-ceiling industrial areas. With this highly efficient lighting project, R.J. Valente Transport will realize an annual savings of over \$5,000 per year on their electric bills. The low cost of about \$0.33 per square foot for materials will provide a quick return on their investment.

KEEPING THE AISLES CLEAR

A New York City distribution center found that its existing fluorescent strip light system was not adequate for storage areas. Most of the light was lost to the area above the fixed shelving, making it difficult for employees to see the products on the shelves below. The company was suffering from costly errors as employees picked and shipped the wrong products, increasing breakage and losses, and flagging employee morale.

The distribution center contacted an area CLP Business Partner to help. Because the new fixtures had to be ceiling-mounted 30 feet above the floor, the company needed a high wattage fixture to deliver the light. The tall shelving units were spaced on 23-foot centers, requiring the proper selection and spacing of the fixtures within the aisle. To see the products clearly on the shelves, the light fixtures needed to provide uniform horizontal and vertical lighting with no dark spaces between the aisles. Finally, they had to feature glare control to provide visual comfort to the employees.

The Right LightSM solution for this application: high-bay fixtures incorporating prismatic reflectors, using 320 Watt pulse start metal halide coated lamps as the light source (342 W per fixture, including the ballast). The prismatic reflector design provides a low level of up light, avoiding the "cave" effect, while delivering good vertical light levels from the top to the bottom shelf. At the same time, glare is limited at crucial angles, improving visual comfort. The coated pulse start metal halide lamps provide white light and improved color rendering - 70 CRI compared to 62 CRI for the old fluorescent lamps.

The more natural appearance of colors under the new fixtures makes it easier to identify package labels, reducing employee errors. Higher-efficacy pulse start systems provide more lumens per watt than standard metal halide systems, helping to reduce electricity consumption and reduce electricity bills. Another benefit: their shorter re-strike time reduces the wait when the lights are turned on. Further, maintenance and replacement costs are reduced because the pulse start metal halide lamps maintain their light output longer than standard metal halide lamps.

The management of this distribution center was so pleased with the original project that they installed the same system throughout the entire facility. Employee morale and productivity improved due to the better quality lighting, and product damage decreased by an amazing 75 per cent – all attributable to The Right LightSM – an effective, energy-efficient solution.



Pulse start metal halide high-bay fixtures with a prismatic reflector make it easy to locate products on storage shelves.

Photo courtesy of Ruud Lighting

DISTRIBUTION CENTER: BOTTOM LINE

For this 24,000 square foot facility, the total wattage was about 0.38 Watts per square foot, significantly lower than the typical 3.0 Watts per square foot for a warehouse area with high ceilings. This reduces the distribution center's electricity bill by more than \$23,500 per year. At the low cost of about \$0.20 per square foot for materials, the investment will provide a quick return through these energy savings.

SUMMARY

The Right LightSM – an effective, energy-efficient lighting solution – is possible for almost any industrial situation. The selection of the proper technology combined with good design provides effective, energy-efficient solutions that yield energy savings while meeting the needs of the people using the space. The examples used in this case study demonstrate how energy-efficient lighting technologies combined with the proper layout, good color-rendering lamps, and low-glare fixtures not only help reduce electricity bills, but provide a better working environment, higher productivity, and satisfied employees.

FOR MORE INFORMATION

The New York Energy Research and Development Authority (NYSERDA) offers opportunities for its Business Partners through the **New York Energy \$martSM** Commercial Lighting Program. Additional programs can help customers reduce utility costs, including the Existing Facilities Program, which offers financial incentives to businesses for energy-efficient lighting equipment and a variety of other energy-efficiency measures.

Tech Specs			
	Irving Tissue	R.J. Valente Transport	Distribution Center
Type of Space	Warehouse	Vehicle Maintenance	Distribution Center
Ceiling Height (ft)	24	16	30
Project Square Footage	15,000	5,600	24,000
Previous Lighting System	High Pressure Solution	T-12HO Linear Fluorescent	T-12 Linear Fluorescent
Project Objective	Adequate and uniform vertical and horizontal illumination Low glare Good color rendering Reduced energy cost		
New Lighting System	T-5HO Linear Fluorescent	T-8 Linear Fluorescent	Pulse Start Metal Halide
New Fixture Wattage	162 W	120 W	342 W
New System Watts/sq ft	0.22	0.37	0.38
Typical Application Watts/sq ft	3.0	2.5	3.0
Annual Electric Cost Savings	\$17,000	\$5,000	\$23,500
Project Cost (\$/sq ft) materials only	\$0.20	\$0.33	\$0.20
Project Benefits	Easier to see and read Reduced energy cost	Easier to see Higher productivity Reduced energy cost	Easier to see Higher employee morale Reduced breakage and losses Reduced energy and maintenance costs

To learn more about these incentives and to make your lighting more effective and efficient, visit www.therightlight.org or call toll-free 1-866-NYSERDA