BUS GARAGE UPGRADES IMPROVE LIGHTING & SAVES ENERGY

Converting from H.I.D. to Fluorescent

New Jersey Transit Corporation
One Penn Plaza East
Newark, New Jersey 07101

PROJECT LOCATIONS
Orange, New Jersey
Patterson, New Jersey
Rutherford, New Jersey
Springfield, New Jersey

ENERGY REDUCTION
73-kW

ANNUAL ENERGY SAVINGS
$66,980.00/year

To most people, a review of the lighting systems at New Jersey Transit's Bus garages would conclude that the high-pressure sodium HI-Bay lighting system was a good design. It provided adequate horizontal foot-candle levels in accordance with IESNA (The Illuminating Engineering Society of North America) recommendations, and good energy efficiency. The Management Engineering and Analysis department at NJ Transit, however, saw the potential to make further improvements in both lighting quality and energy savings based on recent changes in lighting technology, and they turned to O.K. Electric Supply Company to help design an innovative solution.

THE CHALLENGE

While the primary goal of the NJ Transit Management Engineering Team is to reduce operating costs such as energy and maintenance, improving productivity, quality, safety and employee comfort are also important objectives of the team. In shop and maintenance areas, the high-pressure sodium lamp source had been selected for its energy efficiency and good lumen maintenance. The poor color rendition of the high-pressure sodium lamp led to employee concerns over visual comfort in the facility. The poor color was equated with insufficient light levels, and attempts to remedy this situation by adding additional high pressure sodium fixtures in some areas led to light levels in excess of IES Requirements, with workers still perceiving the areas to be dark. Droplights and portable lighting became band-aid fixes rather than solutions.

FLUORESCENT SOLUTION

Working with Intrepid Lighting of Ronkonkoma, New York, O.K. Electric helped develop a solution in some garages utilizing high efficiency Biax fluorescent lamps and electronic ballasts. A special reflector was utilized in the fixture to improve fixture efficiency and it was constructed of durable enhanced aluminum, insuring easy maintenance and long life. The HI-Bay design of the high-pressure sodium fixtures did a poor job of providing vertical illumination needed to light the sides of the bus and engine compartment.

The new fluorescent fixture was designed to improve vertical lighting. The fixture-mounting configuration was an important consideration to New Jersey Transit. The Intrepid fixture is pendant mount, and easily replaced the high-pressure sodium fixture. The ballasts are easily accessible for future maintenance, and start at 0°.

Lower ceiling heights in Patterson were more suitable to the Retrosix™ 6-lamp F32T8 and 4-lamp F32T8 fixture, with a plus electronic ballast. This fixture was also mounted on a special 45-degree angle bracket to illuminate the engine area at the back of the bus

BENEFITS

The new fixtures reduced energy consumption from 33 to 50%. More importantly, color rendition improved from 22CRI to 82CRI, a 74% improvement. Although measured light levels increased 30%, the improved color gave the perception of an even greater increase. From a safety perspective, fixtures are now instant on and instant re-strike, eliminating the warm-up time found on the sodium fixtures. Vertical light levels improved putting more light on the task and work surfaces allowing for improved quality and reduced errors. A five-year warranty on the fixture and ballast, coupled with a 25-year warranty on the reflector, insure reliable performance into the future.

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