

DELTA Snapshots

Issue 9 Electrodeless Lighting

This application shows how electrodeless lamps can reduce relamping requirements and improve color rendering in exterior environments.

Application Profile

The neighborhood surrounding Union Square Park was the center of the nineteenth century arts community in New York City. Although in the mid-twentieth century the neighborhood became associated with drug use and crime, it has now re-emerged as a thriving commercial and residential community.

In 1999, the lighting system in Union Square Park was retrofitted. The old system employed two types of 14-foot post-top luminaires, one with a cluster of five luminaire heads and the other with a single luminaire head. Both types of luminaires had originally used 100-W high pressure sodium (HPS) lamps. During the renovation, the HPS system was replaced with an electrodeless fluorescent lamp system. The diffusers surrounding the lamps were replaced as well.

Lighting Objectives

- Reduce relamping frequency
- Improve color rendering
- Improve visibility of people in the park
- Provide high-profile example of new technology

“Our officers can now monitor activity from outside the park... It’s almost like daytime!”

—Former NYPD precinct commander

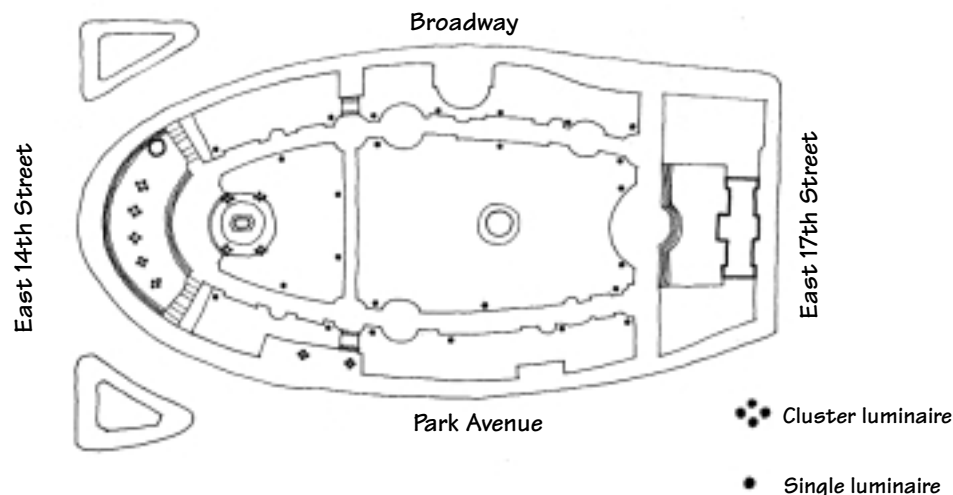


Union Square Park, New York, NY

Technology and Results

The electrodeless lamps in these retrofitted luminaires use magnetic-induction technology to generate light. Predicted lamp life of this electrodeless source is approximately 100,000 hours. Since lamp life is an important factor when determining maintenance schedules, this technology is expected to reduce maintenance requirements at the park.

Local law enforcement officials claim that one benefit of this retrofit is that people can identify others at a greater distance. DELTA noted that faces remain evenly lighted as people walk along most of the paths. The lamps emit white light, so colors appear more distinct than with the HPS system. The new, clean diffusers and new lamps combine to help increase brightness, such that visitors can now even read the newspaper at night.



Cluster luminaire



Single luminaire

Design Highlights

Color: The color temperature of the electrodeless lamps is rated at 3500 K, with a color-rendering index (CRI) of 80. The previous HPS lamps were rated at 2000 K and CRI of 22.

Efficacy: The OSRAM SYLVANIA "Icetron" electrodeless lamp and "Quicktronic® Ice" ballast require 107 W, producing 8000 lumens, or 75 lumens per watt. This efficacy is comparable to 73 lumens per watt for the previous HPS system (9500 lumens and a system wattage of 130 W).

Life: Life of the electrodeless lamp and ballast assembly is rated at 100,000 hours, far exceeding the 24,000+ hours of life for the previous HPS system.

Visual Comfort: When looking down a pathway of single-luminaire poles, DELTA noted that the luminaires did not cause visual discomfort due to glare; a view of two cluster luminaires from the subway station entrance was much less comfortable to the eye.

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Union Square Park, New York, NY

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Lamp Assembly: OSRAM SYLVANIA, Inc.
Photography: Paul Kevin Picone
Graphic Design: JSG Communications, Inc.

DELTA Program:
Director: Sandra Vasconez
Research Specialist: Jennifer Brons
Publication: Judith Block
Drawings: Javier Ten
Reviewers: Dan Frering, Russell Leslie, Mark Rea

DELTA Members:
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