

# 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***

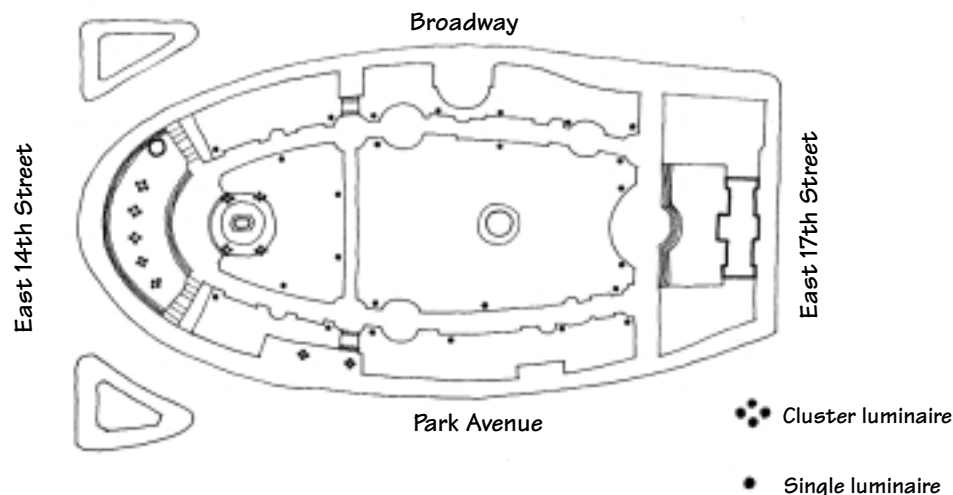


*Union Square Park, New York, NY*

## 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.

**DELTA Snapshots • Issue 9 • February 2000**

**Union Square Park, New York, NY**

**Sponsors: Consolidated Edison Company of New York,  
New York State Energy Research and Development Authority, and OSRAM SYLVANIA, Inc.**

**Luminaires:** Sentry Electric Corporation  
**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:**  
 Consolidated Edison Company of New York, Inc.  
 New York State Energy Research and  
 Development Authority  
 Northeast Utilities System  
 Lighting Research Center

**Union Square Collaborating Agencies:**  
 City of New York Parks & Recreation Department  
 Consolidated Edison Company of New York, Inc.  
 Fourteenth Street Union Square Local  
 Development Corporation  
 New York City Department of Transportation

**Rensselaer**

**LRC**

Lighting Research Center

For publications ordering information contact:  
 Lighting Research Center, Rensselaer Polytechnic Institute, Troy, New York 12180-3590 • FAX (518) 276-2999  
 Phone: (518) 276-8716 • e-mail: lrc@rpi.edu • World Wide Web: www.lrc.rpi.edu

Copyright © 2000, Rensselaer Polytechnic Institute. All rights reserved. Neither the entire publication nor any of the information contained herein may be duplicated or excerpted in any way in any other publication, database, or other medium and may not be reproduced without express written permission of Rensselaer Polytechnic Institute. Making copies of all or part of this publication for any purpose other than for undistributed personal use is a violation of United States copyright law.

