

City of Philadelphia Municipal Energy Office & QL

A • C A S E • S T U D Y

Philips Lighting's QL lamp systems are bringing all the benefits of electrodeless lighting technology into the workplace. The City of Philadelphia chose QL for a particularly difficult-to-maintain, high-ceiling lobby as well as offices—and achieved **cost savings of \$38,357 annually!** QL systems easily retrofit into existing fixture locations and provide an amazing 100,000 hours rated life, energy efficiency, and clean, crisp, high color rendering white light.

John M. O'Connell, Chief Engineer at the City of Philadelphia Municipal Energy Office, wanted to try QL technology, so he obtained a demonstration grant from Public Technology Inc.'s Urban Consortium Energy Task Force. This grant program is funded by the U.S. Department of Energy, and O'Connell will share the results with municipal administrators across the country. The projects represent the largest QL installations in North America, employing 164 lamp systems.

The QL system's unmatched life makes it the ideal solution in spaces where relamping is difficult or costly. The system operates without electrodes or filaments, which are the primary cause of failure in ordinary light sources.

The first of the two QL installations in the program is in the lobby of the Municipal Services Building, where O'Connell's office is located. The two-story lobby is a perfect application with its 30 ft.-high ceilings—up to 45 ft. over the escalators! Even though the lobby lighting burns 24 hours a day, year-round, the 55 watt QL systems will not need to be relamped for 10 years or more!

QL systems replaced mainly 100 watt PAR halogen downlights, plus a few compact fluorescents installed above the escalators. "We needed a high quality of light, and we were getting killed with maintenance costs," O'Connell said. Maintenance personnel had to relamp every 2.5 to 3 months (due to standard halogen's 2000 hour rated life). Using a high-reach battery-operated lift to reach the ceiling meant costly maintenance and safety concerns. They had to rent special equipment to relamp the fixtures above the escalators.

O'Connell reported that with the new QL systems, **the city will save more than \$16,000 a year on relamping costs alone.** Electrical energy saved, an additional \$2,010, brings the savings total to an impressive \$18,010 annually, just in the lobby. "Each new fixture replaced a 100 watt incandescent halogen floodlamp with a 55 watt QL, so we saved 45 watts per fixture—almost half. Also, **illumination levels doubled.** The area is significantly brighter than it was," O'Connell said.



The versatility and tremendous cost savings effected by Philips QL systems is saving The City of Philadelphia nearly \$40,000 a year in just two applications.

Let's make things better.



PHILIPS

Philips Lighting Meets the Challenge

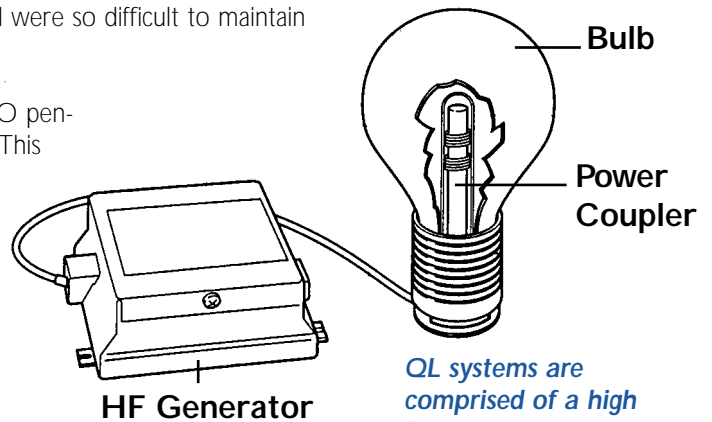
The city chose a QL downlight manufactured by WILA Lighting. "The nice thing about the fixture that we selected for QL is that it exactly matched the aperture of the old fixture—same fixture spacing, same number of lamps," O'Connell said.

Though QL systems rely on advanced fluorescent technology to produce clean white light, O'Connell said that in the lobby, the lighting quality of QL systems is virtually as good as that of the old halogen scheme. "We picked a 3000K version of QL so it would look similar to halogen, and I think it does," he said. "It just looks a lot brighter," with the added benefit of a high color rendering index greater than 80.

As part of his report to other municipal administrators, O'Connell conducted a lighting survey of the building's occupants. Comparing the QL systems with the old lighting, the average respondent saw improvements in the quality of light, the appearance of the lobby, and the appearance of objects and people in the lobby.

In another, older municipal building, seventy 85 watt QL systems replaced one hundred twenty eight 215 watt very high output (VHO) fluorescent lamps suspended high above partitioned office cubicles in Health Center No. 1, which wasn't originally designed for offices. Because this city-owned building is scheduled to be demolished in 2007, a capital-intensive renovation was not an option. But something had to be done for the office workers: the bare-lamp fixtures produced extremely poor lighting, and were so difficult to maintain that normally half were burned out.

O'Connell's solution was to retrofit the existing VHO pendant fixtures for 4100K QL recessed downlighting. This retrofit changed both lighting quality and lighting quantity and will save the city almost \$20,000 annually, between energy and maintenance cost savings. These particular QL systems will last more than 10 years (4,000 hours/year) with minimal maintenance.



QL systems are comprised of a high frequency generator and a bulb containing the power coupler — a ferrite core that works on the basis of magnetic induction.

Benefits of QL

- *Reduced maintenance costs due to 100,000 hour rated life*
- *Excellent color: cool 4000K and warm 3000K color temperatures with > 80 CRI*
- *Compact size: easily retrofits into HID fixtures and recessed downlights*
- *Instant start, hot or cold*
- *No color shift over system life*
- *Flicker-free light output*
- *Can be switched on/off frequently—excellent with occupancy sensors*
- *Starts down to -40°C (-40°F)*

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