

Energy-Efficient LED Track Lighting

Energy-intensive halogen incandescent fixtures are often used for accent lighting applications, such as drawing attention to artwork and displays in museums.

The Lighting Research Center collaborated with WAC Lighting to create an energy-efficient LED track light that uses dramatically less energy while providing a lighting scheme that accentuates artwork in a flattering way.

The goal was to create an ENERGY STAR® compliant track light that provided the quantity and quality of light comparable to a 50-watt (W) MR16 halogen with the following characteristics:



- 550 lumens (lm)
- Luminous efficacy greater than 50 lm/W
- 10° spot light with 5000 candela center beam intensity
- At least 35,000 hours of life with no noticeable color temperature shift and little or no lumen depreciation
- Compact size (no more than 3.5 inches in diameter)
- CRI of 85 or higher



In order to achieve this, the LRC provided optical design and thermal analysis support to WAC Lighting, and WAC Lighting focused on the mechanical housing and driver design.

Sponsors

New York State Energy Research and Development Authority (NYSERDA)
WAC Lighting



View LRC Project Sheets at
www.lrc.rpi.edu/resources/newsroom/projectsheets.asp

Field Test Results

The LRC demonstrated the LED accent lighting in a community art gallery in the basement of a public library in Mineola, NY. Existing downlights operating compact fluorescent lamps (CFLs) were compared to conventional MR16 track heads and the WAC LED track light. A site evaluation was performed by an independent evaluator.



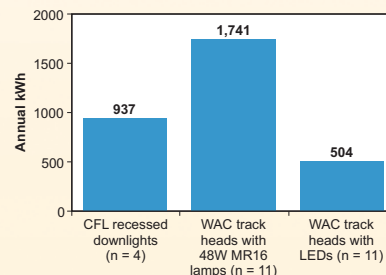
The exhibit area at the Mineola Public Library, Mineola, NY, used for the demonstration

- Occupant survey ratings for the LED accent lighting system were equal to or better than those for the conventional MR16 lamps.

Survey results: "Overall, compared to other gallery spaces, I find this lighting to be..."



- Compared with the existing CFL downlights, both the MR16 and LED accent lighting systems were preferred for lighting the artwork.
- The LED accent lighting system used less energy compared with both CFL and MR16 lighting systems.



Annual energy use estimates

- In this application, the LED accent lighting system met the most recent energy code limits for lighting power density, while the CFL and MR16 systems did not meet code requirements.

Lighting
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