LED Construction Lighting Evaluated

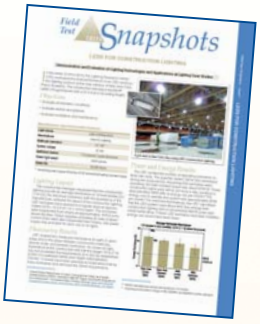
The LRC evaluated the field performance of a commercially available LED construction lighting product at the new campus of New York City's Police Academy. Results were presented in a DELTA (Demonstration and Evaluation of Lighting Technologies and Applications) publication.

The construction manager on site requested that the construction lighting provide an average illuminance of 10 footcandles (110 lux), twice the minimum required by code (5 fc, or 54 lux). The

Temporary LED construction lighting was installed in the 50,000 ft² (4625 m²) gymnasium at the new campus of New York City's Police Academy. Ceiling height was 27.5 ft (8.4 m).

electrical contractor selected a layout of regularly spaced out LED luminaires suspended above the floor, using approximately 200 luminaires. The construction lights were left on 24 hours a day. Through photometric measurements, the DELTA team found it would be possible to install about half as many luminaires and still meet code requirements. LRC researchers calculated that the LED system used about 60% less energy than conventional pulse start metal halide lamp construction lighting, but fewer luminaires would result in even lower energy use and cost.

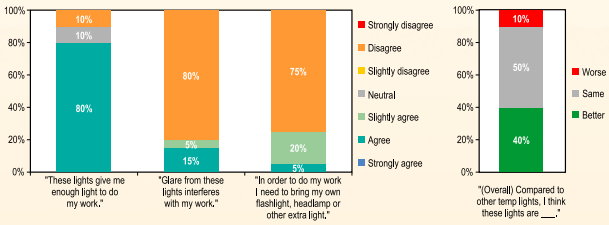
Through questionnaires administered on site, the DELTA team found that most workers indicated they had sufficient light to do their work and that glare was not a major concern, although some workers did use supplemental lighting. Overall, the LED luminaires were rated as "better" or "same" by most workers. The DELTA team also interviewed site representatives for the electrical contractor, whose impression was that the LED luminaires were "not as powerful" as conventional construction lighting, and that the LED luminaires required more work to install.



The Field Test DELTA Snapshot publication, *LEDs for Construction Lighting*, discusses the questionnaire results and presents further recommendations.

Key Findings

- The LED system used 60% less energy than conventional metal halide lamp construction lighting
- Reducing the quantity of luminaires by half would have resulted in commensurately lower energy use and installation costs
- 80% of workers reported they had enough light to work without any glare interference
- Compared to conventional construction lighting, 40% of workers rated the LED luminaires as "better" and 50% rated them as "same"



The DELTA team interviewed a sampling of workers that included plumbers, steam fitters, sheet metal workers, and other tradespeople.

Sponsor

New York State Energy Research and Development Authority (NYSERDA)

Manufacturer

Clear-Vu Lighting

Publication

The free DELTA publication is available for download at: http://www.lrc.rpi.edu/programs/delta/publications/publicationsDetails.asp?id=938&cat=17

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