

Field Test DELTA: T5 Fluorescent High-Bay Luminaires and Wireless Lighting Controls

The LRC's DELTA program field-tested a 6-lamp T5 fluorescent lighting system with wireless motion-sensing lighting controls. DELTA tested the performance and energy efficiency of the system in a high-bay environment, compared to an existing metal halide lighting system.

Field evaluation

The T5 fluorescent lighting system was retrofitted in several storage aisles at a distribution center warehouse in Albany, N.Y. Motion sensors switched luminaires to 1/3 of full light output (sleep mode) when no motion was detected. DELTA evaluated the system in order to:

- Compare illuminances, energy usage, and worker feedback of the previous metal halide lighting with three different light levels from the T5 fluorescent lighting system
- Gather worker feedback regarding the performance of the motion sensors when controlling each luminaire individually vs. grouped by aisles
- Quantify the energy implications of several motion sensor modes (individual vs. grouped operation, and full output vs. 2/3 output when occupied)
- Test the logistics of the wireless controls setup and operation



Sponsor

NYSERDA

Manufacturers

Lamar Lighting, Watt Stopper/Legrand

Lamp Donation

G.E. Lighting

Ballast Donation

Advance/Philips Lighting Electronics

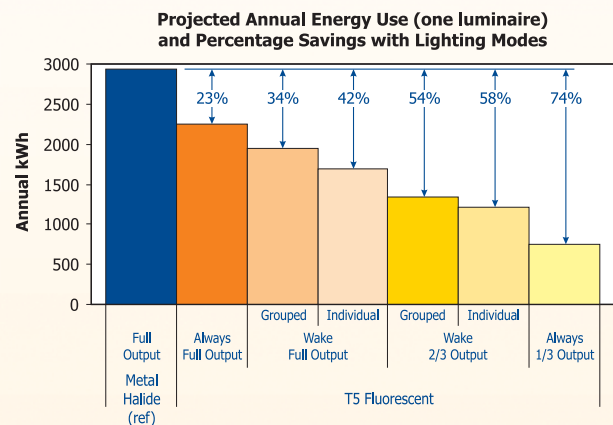


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Photometric and energy performance

The new luminaires provided three times the light output of the existing metal halide high-bay luminaires, while simultaneously requiring 23 percent fewer watts. Even with frequent occupancy throughout the day, warehouse storage aisles showed substantial energy savings from the use of both T5 fluorescent luminaires and motion sensors.

The wireless motion-sensor controls operated successfully both in groups and individually. Individually controlled luminaires were in sleep mode more often than grouped luminaires, thus increasing energy savings.



Employee feedback

Warehouse employees preferred the fluorescent system to the existing metal halide system, particularly when illuminances were higher. Even when workers looked directly at the bare lamps, the high output T5 fluorescent lamps were not considered to be glaring.

The workers were not bothered by motion sensor activity as long as the lights did not turn off while they were working in the space.

There was no distinguishable preference among employees for either individual or group control of luminaires.

