

LEDs: Saving Energy in Retail Windows

Retailers showcase merchandise and attract shoppers by using high illuminance contrast between the displayed object and its surroundings. This practice results in high energy use and cost. A prior LRC lab study showed that lighting the display background with colored LEDs could lower energy use from accent lamps by up to 50%. To further validate this concept in an actual retail environment, the LRC investigated the use of colored LED lighting in display windows at three Los Angeles Gap stores. The study's goals were to:

- Demonstrate reduced energy use for lighting in retail display windows
- Maintain or enhance visibility and visual appeal of the display windows while capturing shoppers' attention
- Maintain or improve retail sales

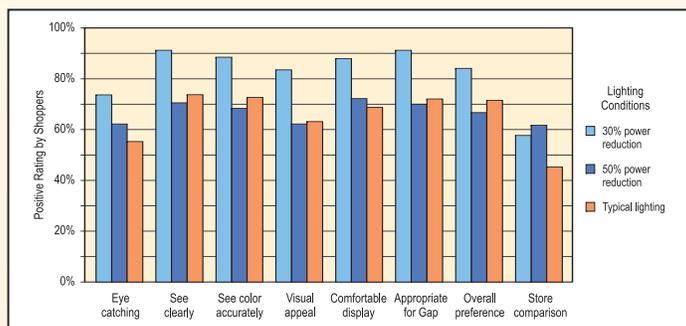


LRC researchers developed slim-profile blue LED fixtures to add colored lighting to retail display windows.

Experiment

LRC researchers created a colored background for the window mannequins by using blue LEDs to illuminate a white backdrop. By eliminating fluorescent lamps and reducing the number and wattage of halogen accent lamps, they reduced power use by 30% or 50%.

During an eight-week period, 700 surveyed shoppers rated the attractiveness, eye-catching ability, comfort, and visibility of each lighting condition. Researchers also analyzed store sales data.



Cumulative ratings from all stores for each lighting condition.

Sponsors

Project: Los Angeles Department of Water and Power
Site: Gap, Inc.
Equipment: Advance Transformer and Lumileds



Results

Compared with typical lighting, the colored LEDs:

- Maintained or improved shoppers' opinions
- Produced a statistically significant improvement on all survey questions when combined with a 30% power reduction
- Produced no significant difference in shoppers' opinions when combined with a 50% power reduction
- Did not affect retail sales

Conclusions

Colored LED lighting can be used successfully in retail windows to:

- Provide significant energy savings
- Improve visual appeal and aesthetics
- Attract potential customers

For more information, visit www.lrc.rpi.edu/programs/solidstate

