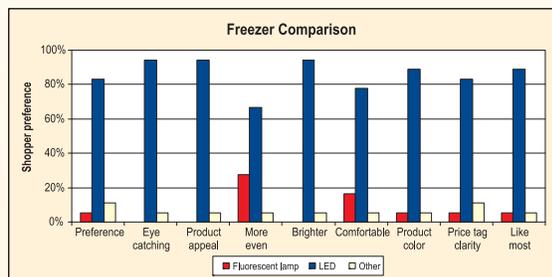


Energy-Efficient Lighting Alternative for Commercial Refrigeration

Supermarkets commonly use fluorescent lighting in their refrigerator and freezer display cases. But in cold temperatures, fluorescent lamps suffer from decreased light output and reduced lamp life. In a prior lab study, the LRC developed and evaluated a prototype refrigerator lighting system using white LEDs. Even though the total light output of the LED system was one-third that of fluorescent lighting, results showed that the LED lighting was more evenly distributed, and people strongly preferred it over traditional fluorescent lighting.

Through a new field study, the LRC is evaluating the effectiveness of LED-based lighting in supermarket freezers. LEDs have the potential to reduce maintenance costs over time because of their longer life compared to fluorescent lamps. Researchers expect improvements in white LED technology to also generate energy savings in the future.



Pilot studies

Pilot studies conducted at Price Chopper indicate that shoppers like the LED freezer case and rate it higher than the fluorescent case or other cases in the aisle.

LRC researchers predict that when the efficacy of white LEDs reaches 37 lumens per watt, LEDs will use less power than traditional fluorescent lamps in this application.

The LRC will release a full report of the study's results in spring 2005.

Field study

GELcore, Tyler Refrigeration, and the LRC designed a prototype LED-lighting system for a four-door freezer typically found in supermarkets. White LEDs were mounted along the vertical edges of each door and at the top of the freezer case. The LED freezer and a similar fluorescent-lighted freezer were installed in a Price Chopper supermarket in the Albany, New York area. LRC researchers will analyze the performance and power consumption of each freezer, and will survey shoppers about the attractiveness, visual clarity and comfort, and color rendering of the freezer lighting.

Sponsors

Project: New York State Energy Research and Development Authority

Site: Golub Corporation (Price Chopper)

Equipment: GELcore and Tyler Refrigeration

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