

# BetaLED® Project Brief Overview

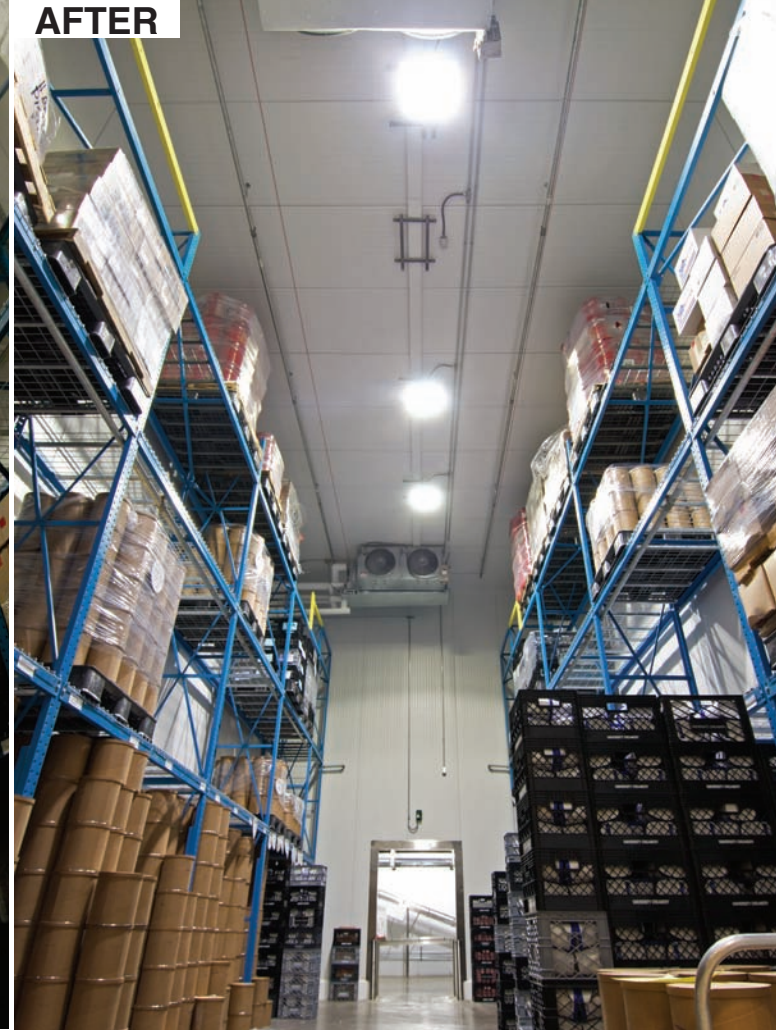
Penn State Berkey Creamery – University Park, Pennsylvania



**BEFORE**



**AFTER**



## PROJECT SUMMARY

“The new lights are terrific. They **strike instantly**, provide **more lumens** than our old induction lights, will **last for years** and are **cost effective**. They are superb and we are planning to **replace all of the metal halide lights** in our processing room with **LED luminaires from BetaLED.**”

*Thomas Palchak  
Manager, Penn State Creamery*

<b>End User:</b>	Penn State Berkey Creamery
<b>Application:</b>	Cold storage facility retrofit, minus 25°F
<b>Products:</b>	Six THE EDGE canopy luminaires by BetaLED®
<b>Benefits:</b>	<ul style="list-style-type: none"><li>• Three canopy luminaires replaced five induction lights in the hardner freezer achieving better illumination with 256 fewer watts.</li><li>• In a one-for-one replacement in the blast freezer, three BetaLED luminaires save an additional 171 watts.</li><li>• BetaLED luminaire operation at minus 35°F and minus 25°F, performed at an average 10 hours per day, five days per week, will result in lumen depreciation of less than five percent over ten years.</li></ul>



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Penn State Berkey Creamery – University Park, Pennsylvania



## University Creamery improves freezer storage efficiency in more ways than one

The largest university creamery in the nation for over a century, Berkey Creamery at Penn State has outgrown its location many times. The most recent expansion in 2006 brought a move to the first floor of a new Food Sciences building where everything but the lighting in the creamery's storage freezers was state-of-the-art.

The 15,000-square foot facility provided more manufacturing and service space, but the induction lights in the deep freezers were causing safety and work efficiency challenges for employees. Thomas Palchak, manager of the Penn State Creamery, challenged the PSU Physical Plant to solve this dilemma. Blair Malcom, electrical engineer for PSU Physical Plant Engineering Services, saw an opportunity to improve on those challenges with a lighting replacement using BetaLED luminaires.

Five induction lights from the 27-foot high hardener room freezer ceilings were replaced with three of THE EDGE canopy lights achieving better illumination and using 256 fewer watts. Three fixtures in the adjacent 14-foot high blast freezer were replaced with three BetaLED canopy lights, saving an additional 171 watts while achieving better light levels. The visible results were dramatic. The shadow-cast freezer rooms are now filled with a uniform, brilliant white light. Previously, the dimly lit hardener environment hampered workers' ability to locate ice cream containers. Workers can now maneuver easily around the freezers and quickly identify the container labels.

"One advantage of these lights," noted Blair, "is that BetaLED fixtures can be configured with the appropriate number of light bars to accommodate the amount of light needed in the space." Anywhere from two to twelve light bars can be placed in each fixture. In the smaller freezer area, the fixtures use four light bars to illuminate the space, whereas in the large storage freezer with 27-foot ceilings, each fixture uses seven light bars.

In this cold storage operating condition of minus 35°F and minus 25°F, the BetaLED luminaires are estimated to operate an average 10 hours per day, five days per week, and only depreciate less than five percent of their initial output over ten years. Additionally, the refrigeration system has less of a heat load from the elimination of induction lights that were burned continuously, further saving on energy costs.

The creamery management is impressed with the results. "The new lights are terrific," said Palchak. "They strike instantly, provide more lumens than our old induction lights, will last for years and are cost effective. They are superb and we are planning to replace all of the metal halide lights in our processing room with LED luminaires from BetaLED."

Not only are these areas safer, the change will produce significant energy and cost savings. Additionally, as the temperature drops, the THE EDGE LED luminaires inherently produce more light and last longer, further reducing maintenance.

Additional power savings are achieved from turning off the fixtures when not in use. Workers left the previous induction lights on continuously because they took so long to warm up to full brightness. The BetaLED luminaires light immediately, eliminating the need to have them on all the time. With fewer light fixtures, additional energy savings are achieved. The combination of using fewer fixtures for shorter periods of time provides the creamery with a lower energy bill and significantly reduced maintenance expense.

### DID YOU KNOW?

#### LEDs perform better in a cold storage environment.

LED performance inherently increases in cold temperatures because the technology enables the luminaires to function better and last longer in colder environments. Traditional light sources generate more heat than LEDs, causing the refrigeration system to work harder to remove the heat.

In addition, lower temperatures typically reduce the efficacy of some traditional light sources (i.e. fluorescent). Therefore, more power is required to generate the desired illumination creating an increased heat load on the refrigeration system.

In cold storage freezers like the Penn State Creamery where rapid blast chilling is done at minus 35°F and hardening and storage at minus 25°F, energy use is significantly reduced while efficiency and lumen maintenance are extended beyond the advantages already achieved by LED technology in these areas.