



## High Bay LED retrofits increase visibility in manufacturing facilities, and lower annual lighting costs by \$360,000

Not only did the LED retrofits multiply the foot candles in this manufacturing facility – increasing productivity, safety, and sales – The lighting electrical consumption went from 458 watts to 150 watts resulting in a savings of 74% or an overall utility bill savings of 1/3.

The world’s largest non-military helicopter manufacturer has been a loyal customer of Cornerstone Construction Group for over a decade.

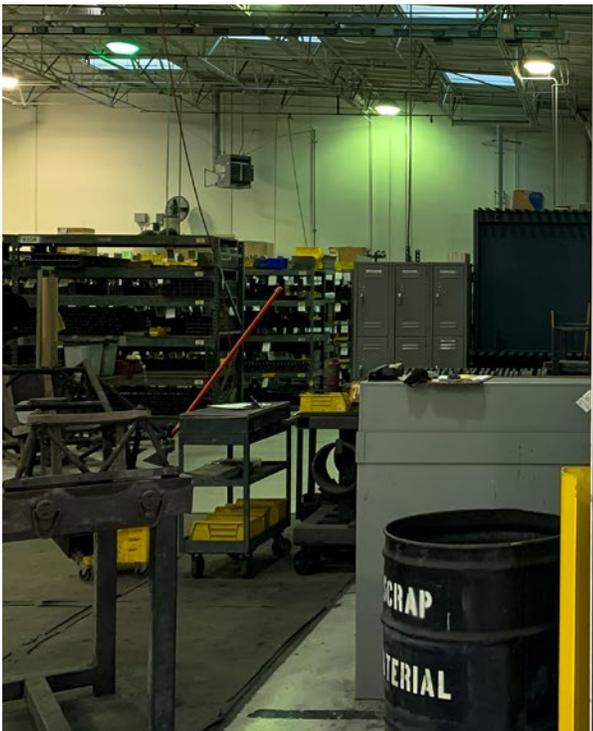
Over the years, one of such suggestions had been for them to replace the inefficient HID luminaries installed in their three manufacturing facilities. These facilities are large, about a quarter of a million square feet each. And the metal-halides in place could not sufficiently illuminate these sizeable work areas.

The HID bulbs took about thirty minutes to reach their maximum capacity, and even then, lumen output was weak. The colors in the helicopters were muted and employees complained about weak visibility. Even with poor lumen output, these lights were expensive – monthly ballast maintenance was commonplace, and the utility bill was steep and getting steeper.

### An LED retrofit to the rescue

Needless to say, these facilities were due for a lighting overhaul. Cornerstone’s proposal was to implement an LED retrofit on all three manufacturing buildings.

With new LEDs, the helicopter company would not only be able to upgrade their facilities’ Color Rendering Index (CRI), but they would gain the added benefit of



Before upgrade



one of the manufacturing areas



After LED upgrade



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saving thousands of dollars in energy cuts. Cornerstone's Energy and Environment Impact Analysis projected that an LED retrofit would save their company around \$8,000 a month per building in utility costs alone.

With years doing business together, they trusted Cornerstone's advice. They agreed to do a test run in one of the facilities, and if the results were favorable, they'd proceed with the next two buildings.

### **The company's President didn't need to see the utility bill to know that this investment was well worth the price tag**

After Cornerstone finished retrofitting 400 High Bay 5,000 Kelvin LED illuminants in the first building, the benefits were palpable. When the president of the company saw the new light installation, he immediately went to the project facilitator and instructed him to move forward on the next two buildings, necessitating the need for 880 more LED luminaires.

Working nights and weekends, the Cornerstone team proficiently worked around the company's manufacturing operations without impeding production nor harming any of the million-dollar products waiting for shipment on hangers. Only three out of the 1,200+ retrofitted illuminates failed, and Cornerstone's team was able to catch the faulty bulbs within hours after installment.

### **The new LEDs transformed the drab facilities into a bright, work-conducive environment**

The 5,000K LED luminaires generated a crisp, bright luminescence, seamlessly integrating with the buildings' open-ceiling design that housed many skylights. Now, the facilities could sustain the same energizing white-blue temperature no matter whether it was day or night, clear or clouded sky.

### **These high-frequency LED lights further mimic daylight in their psychological impact**

Studies have shown that 5,000K light helps stimulate endorphins and suppress melatonin production, making for happier, more efficient

employees and better interdepartmental relationships. The compliments poured in.

The increased visual perceptivity benefited not only the manufactures, but also quality control inspectors and potential customers. Thanks to the new LEDs, the colors and fine details of the helicopters popped, and the photographic features were handsomely improved – helping significantly increase not only workspace safety and comfortability, but also productivity and sales.

### **An additional boon: significant energy and dollar savings.**

To the delight of the company's executives, the payback and ROI benefits were even greater than the initial projections.

In the end, each building saw utility savings of \$10,000 a month, amounting to \$360,000 cuts in annual utility costs. Moreover, LED lights are high-quality, and can last around 15 years or 50,000 hours of burn time. This meant that their company no longer needed to deal with the hassle of monthly ballast maintenance, saving them even more in parts and labor. **C**

### **About Cornerstone Construction Group, Inc.**

**A**fter having served the U.S. Navy as a Chief Engineer during the Vietnam War and then having spent 12 years serving major SoCal medical centers as Director of Facilities and Construction, Vic Braden, along with his wife, Linda, founded Cornerstone over 30 years ago to provide design and construction management services to health care and commercial enterprises.

For decades, Cornerstone has developed a trained management staff including Project Managers, Supervisors and Journeymen Trades-in-House resulting in significant growth to the company. In 2007, their son V.J. joined the company. The family manifests a strong desire to invest in the continued development of the South Bay and over the years, has spent spare time and company resources helping their local communities.