

industrial case study: AB&I Foundry



Background

In 2008, Lockheed Martin's Heavy Industry Energy Efficiency Program (HIEEP) performed a site audit at the AB&I Foundry Oakland Plant to assess the possibility of improving the efficiency of the lighting system and evaluate potential energy savings opportunities.

Original Situation

- Foundry is more than 100 years old
- Lighting system not upgraded for the past 10-15 years
- Annual cost of operations approximately \$180,000
- Substantial portion of costs attributed to continuous lighting in many areas for safety, security and surveillance monitoring reasons
- Lighting system consisted of 1000 and 400 watt Metal Halide (MH) high bay fixtures

Following a thorough selection process, Metrolight's Electronic HID technology was chosen due to the specific performance features of the electronic HID ballast:

- Increased lumen maintenance
- Double lamp life
- Dimming capabilities
- EMS control integration

Snapshot

Energy Savings
60%

Number of Luminaries

Reduced by 33%

Lamp Power

Reduced from 1000 and 400w to 450 and 320w respectively (further reductions gained with dimming schedule)

kWh Saved

Over 732,000

Simple Payback Period

1.52 years

Total Annual Saving

\$102,486

Annual CO² Saved

526 metric tons

Peak Demand Saving

97.6 WK_{peak}

The Result

The 1000 and 400 watt MH fixtures in the production areas, storage areas and shops were replaced with Metrolight's 450 and 320 watt electronic ballasts MH fixtures respectively.

Using the internal pre-program capabilities of the ballast and an external timer, the input wattage of the 320 watt ballast was further programmed to dim to 269 watt and 160 watt respectively according to a pre-determined energy saving schedule.

- Energy savings of 60%
- Reduced energy usage by 732,000 kWh/yr
- Peak Demand Savings of 97.6 KW_{peak}
- Dimming capabilities
 - Reduction of wattage output
 - Dimming wattage
 - Reprogramming wattages in the field
 - Occupancy sensors

“In undertaking this project, AB&I wanted to increase the intelligence of our systems via controls, maximize energy savings through dimming functions while seamlessly integrating the new system with our current platform. Metrolight efficiently and effectively accomplished all of these objectives, even though the project was carried out in a facility over 100 years old.”

AI Chang of AB&I



Before Metrolight



After Metrolight

Features	Before Installation	After Installation	Savings
Fixture Power Consumption (W)	1000/400	450/320	550/140-160 ¹
Operating Hours/Days	24/365	24/365	-
Annual Lighting-Related Energy Cost	\$180,000	\$77,514	\$102,486
Total Annual Savings	\$102,486		
Simple Payback/ROI	1.52 years/65%		

¹ Depending on dimming schedule