

# LOCKHEED MARTIN HEAVY INDUSTRY PROGRAM



*WE NEVER FORGET WHO WE'RE WORKING FOR*

**Goals:** Reduce the energy consumption of the lighting system for two buildings

**Strategies:** Install occupancy sensors and replace high pressure sodium lamps with compact fluorescent lamps

**Benefits:**

- **Total Energy Savings:**  
49,921 kWh annually
- **Peak Energy Savings:**  
14.6 kW

**Equipment Installed:**

- **(83) Occupancy Sensors**
- **(60) 42W Compact Fluorescent Lamps w/ Electronic Ballasts**

**Financial Analysis:**

- **Total Project Cost:**  
\$19,000
- **LM Paid Incentive:**  
\$3,957
- **Energy Cost Savings:**  
\$5,914
- **Simple Payback Period:**  
2.5 years

## Lighting Controls Retrofit



A certain company, covered by this case study, contains a facility comprised of pharmaceutical manufacturing, laboratory, and office buildings. For this project, Energy Engineers audited two (2) separate buildings and their lighting systems.

Building A is a typical office building with open offices and private offices. The operation is consistent with a one shift Monday through Friday office facility. The lighting equipment consists of a mixture of 2-lamp and 3-lamp T-8 fixtures powered by electronic ballasts. There are one hundred eighteen (118) private office spaces with manual on/off switches. There are three-hundred fifty-two (352) 2-lamp fixtures and one-hundred thirty-seven (137) 3-lamp fixtures in private offices.

Building B is another typical office building with open offices and private offices. The lighting equipment consisted of a mixture of lamp and fixture combinations depending on space type. The lighting equipment involved in this project consisted of sixty (60) 150 watt High Pressure Sodium (HPS) lamps in fixture hoods illuminating hallways. These lights were on a circuit breaker and operated 16 hours a day, Monday through Friday.

Continue on reverse....



Energy Engineers audited the two (2) buildings and recommended the installation of occupancy sensors in Building A to reduce the operation of the lighting fixtures when no one is present. A total of eighty-three (83) sensors were installed in Building A, these sensors control sixty-one (61) three-lamp fixtures and two-hundred-forty (240) two-lamp fixtures. Additional occupancy sensors would have been installed but some of the office spaces had hard to reach wall switches or temporary partitions that blocked the sensors.

In Building B, hard-wired compact 42W fluorescent lamps replaced the HPS lamps. The electrical wiring was modified to bypass the existing HPS ballast in order to use the electronic ballast installed with the compact fluorescent lamps. Compact fluorescent lamps require less power to operate, providing the same lighting output, therefore they will save energy.

The total project cost was \$19,000, however Lockheed Martin paid an incentive of \$3,957. Implementation of this retrofit provided an energy savings of 49,921 kWh annually, corresponding to an energy cost savings of \$5,914 per year. These savings made the simple payback period of only 2.5 years!

#### **Project Team:**

- **Pacific Gas and Electric Company**
- **Lockheed Martin Energy Services Inc, Heavy Industry Program**

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It is our objective to assist PG&E heavy industry customers in:

- Improving their competitive position
- Identifying process-focused energy improvements and other opportunities (e.g. demand response)
- Facilitating electricity and natural-gas energy efficiency equipment and demand reduction upgrades
- Reducing Operating costs per unit of product
- Improving product quality and production rate
- Reducing waste, pollutants, and Green House Gas emissions

**Remember that increased production efficiency = lower production costs  
= increased profits**

The Heavy Industry Efficiency Program is managed and facilitated by Lockheed Martin Services Inc.(LMSI), and is funded by California utility ratepayers, under the auspices of the California Public Utilities Commission. The program objective is to identify and facilitate the implementation of major process-orientated and other energy-efficiency upgrades for PG&E's heavy industry customers. Customers that install energy efficiency systems receive incentives based on the annual kWh or therm saving achieved.