

ENERGY PROJECT CASE STUDY

LIGHTING IMPROVEMENT

Financials

- ◆ **Total Turnkey Installed Cost: \$146,453**
- ◆ **Annual Energy Cost Savings: \$42,310**
- ◆ **Simple Capital Payback: 3.46 years**
- ◆ **Project IRR: 26%**
- ◆ **CO2 Equivalent Reduction : 658 tCO₂e**
(Natl. Avg. Emission Rate)

Description of Facility

- ◆ Manufacturing facility, printing, 375,000 Sq. Ft.
- ◆ Multiple printing lines
- ◆ Multiple binding machines



System Description

- ◆ 400 watt Metal Halide fixtures
- ◆ Eight foot 2 lamp fixtures with T12 lamps
- ◆ Four foot 2 and 4 lamp fixtures with T12 lamps

System Opportunities/Issues

- ◆ A detailed lighting audit was performed for the facility
- ◆ General facility lighting in production and warehouse areas were 400 watt metal halide fixtures
- ◆ Fluorescent lighting was used for task lighting in production areas
- ◆ Fluorescent lighting was used for lighting in office/maintenance/break areas

Project Description

- ◆ The 400 watt metal halide fixtures were replaced with 320 watt pulse start metal halide fixtures
- ◆ Fluorescent task lighting fixtures using T12 lamps and magnetic ballast were retrofitted with new T8 lamps and electronic ballast or the fixtures were replaced with new fixtures using T8 lamps and electronic ballast
- ◆ Fluorescent lighting fixtures in office/maintenance/break areas were retrofitted with T8 lamps and electronic ballast

Project Benefits

- ◆ New (more efficient) fixtures, lamps and ballasts for the metal halide fixtures
- ◆ New (more efficient) lamps and ballasts for the fluorescent fixtures
- ◆ Increased color rendition from the new lamps and ballasts
- ◆ Reduction in energy usage and costs
- ◆ Reduction in O&M costs



Company Overview

Solution Dynamics is focused on providing our clients with high value services to assist them with the evaluation, development, and implementation of utility related cost reduction strategies and measures. These strategies include taking into account issues such as energy cost savings, sustainability, Green House Gas (GHG) impacts/carbon footprint, and reliability. Solution Dynamics looks at facilities as a whole to evaluate both demand side and supply side strategies and solutions. The principals of the company bring over 60 years of experience in the energy industry to our clients. This depth of experience allows Solution Dynamics to operate efficiently and effectively to derive value.

Solution Dynamics works closely with our clients to look at all aspects of their energy related costs. This includes; how production processes utilize energy and other utilities, the operation and maintenance costs, which fuel is being utilized, what utility rate structures are being used, is there equipment in need of replacement, what opportunities are there for low cost and capital based improvements, and what are financial and environmental benefits. Solution Dynamics develops and implements cost reduction strategies and measures that are specifically tailored to meet the individual needs of each facility. Energy supply opportunities provide reduced costs, while demand side opportunities include both technology and operational improvements to reduce energy use and cost. This also translates into benefits that go beyond simple energy cost reduction that include newer equipment, increased reliability, improved process control, reduction in GHG impacts and the potential generation of carbon credits.

Solution Dynamics has several established programs and as a company we take on the risk of successful performance to achieve results. Solution Dynamics has unique, high value, programs that have been developed to meet our client's requirements. These programs combine the ability to identify and implement both Low Cost High Value operational types of savings along with more traditional capital based savings. We also have supply side programs that guarantee performance to eliminate the risk of our clients.

Services Provided

Solution Dynamics specializes in the development and delivery of utility and energy consuming equipment related cost reduction opportunities and can deliver them in an efficient manner. Services provided by Solution Dynamics include:

1. Identification of high value cost reduction opportunities
2. Evaluation & development of energy strategies
3. Utility rate analysis
4. Project scope development
5. Project financing assistance
6. Detailed cost and savings analysis for professional quantification of project value
7. Development of measurement and verification plans
8. Project development for Construction
9. Turnkey project management, implementation, and commissioning of cost savings opportunities

Results

Solution Dynamics has a very strong and sustained track record of being able to successfully develop and implement cost reduction opportunities for our clients. We excel in identifying opportunities, many of them high value, which other companies typically miss. When reasonable economic criteria are utilized energy cost reductions that range between 5% to 25% of a facilities energy cost.

Energy Systems Experience

Solution Dynamics is experienced in a wide range of commercial and industrial facilities and energy consuming systems. Typical systems include: Boiler & Steam systems, Chilled water systems, Cooling towers, Compressed air, Lighting, HVAC for plants and offices, Building automation controls, Ammonia refrigeration systems, Variable speed drives, Efficient motors, Co-generation & Combined Heat & Power Systems, Heat recovery, Metering systems, Measurement and Verification protocol, and other types of energy, water, wastewater, industrial gasses and related utility systems.