

CASE STUDY: R & D FACILITY ENERGY PROJECT DEVELOPMENT

SYSTEM TYPE: Air Handlers, Central Plant, Cooling Tower, and Lighting

PROJECT FINANCIALS

- Total Turnkey Installed Cost: \$ 321,965
- Annual Energy Cost Savings: \$ 111,204
- Annual O & M Cost Savings: \$ 10,277
- Simple Energy Funded Capital Payback: 2.6 years
- Average Project IRR: 35%
- CO2 Equivalent Reduction: 2,105 tCO₂e (Natl. Avg. Emission Rate)

R & D Facility Implements Four (4) Energy Savings Opportunities—Saves \$111,204 Annually. Project IRR 35%. Simple Payback 2.6 Years

Facility Description

- Approximately 365,000 Square Foot Facility
- Approximately 65% Research Laboratories
- Administrative Offices
- Conference Rooms
- Pilot Plant Area



System Opportunities

- A majority of the existing lighting had already been upgraded to efficient technology
- Lighting was left on during times when the room or lab was not occupied
- Efficient technology and operational improvements were available for the central chilled water plant including VFDs on the chiller, some pumping redesign, and control optimization opportunities
- The operations of two air handlers could be modified and optimized for increased energy efficiency.

Summary of Energy Savings Opportunities

Various measures were implemented on the HVAC, and lighting systems to improve the overall efficiency of the property. Several of the measures implemented are listed below.

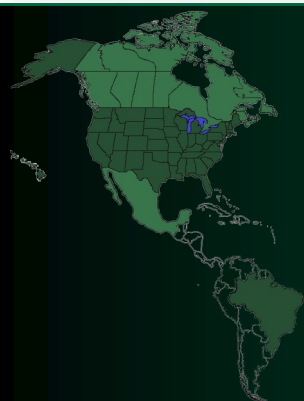
Air Handlers	<ul style="list-style-type: none"> Converted dual duct air distribution boxes from constant volume boxes to variable volume boxes and installed VFDs on fans Hot deck / cold deck reset, supply air temperature reset. Night setback routines, optimum start/stop
Central Plant	<ul style="list-style-type: none"> Retrofitted chiller to incorporate VFD capacity control Install VFD on primary only chilled water pumps & controlled flow to chillers Modified operating set-points and optimized chiller sequencing
Cooling Tower	<ul style="list-style-type: none"> Modified operating setpoints and adjusted fan sequencing.
Lighting Systems	<ul style="list-style-type: none"> An aggressive occupancy sensor installation program utilizing over 200 sensors Replaced high pressure sodium lighting in pilot lab and stock rooms with high bay florescent technology Upgraded remaining fixtures to efficient T8 technology

Financial Data

Investment	\$ 321,965
Annual Energy Savings	\$ 111,204
Annual O & M Savings	\$ 10,277
CO2 Equivalent Reduction	2,105 tCO2e (Natl. Avg. Emission Rate)
Project IRR	35%
Payback Period	2.6 Years



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Corporate Office: Kansas City, KS | Web: www.sol-dyn.com | Email: info@sol-dyn.com