



CASE STUDY: Energy Savings in Cooling Tower System

Facility Background

The facility, located in Milpitas, California, is a high-tech electronics manufacturing facility. The facility is about 110,000 sf, which includes a 22,000 sf Class 1 cleanroom. The facility has an annual electrical energy consumption of approximately 10.5 million kWh per year.

Summary

BASE Energy, Inc. was chosen to recommend energy savings opportunities, to estimate the annual energy savings potential, the cost savings, and the one-time financial incentive through PG&E's Retro-Commissioning (RCx) Program. BASE worked with the facility to identify and analyze energy efficiency measures and help them make a decision on implementation of the measures.



Results

The facility's cleanroom HVAC system is served by three cooling towers and 29 various pumps, which are available 24 hours per day, 365 days per year, for a total of 8,760 hours per year. Four of the measures identified involved energy savings from controlling various water pumps which serve the cleanroom HVAC system. The measures had a total recommended annual cost savings of \$56,132, which includes a reduction in annual electrical energy consumption of 412,100 kWh, representing approximately 3.9% of total energy presently used by the facility. The total utility incentives were estimated to be \$37,100. The total cost of implementation of all potential opportunities, net of utility's incentives, was estimated at approximately \$89,404, resulting in an overall simple payback period of 1.6 years.

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Summary of Savings

The table below shows a description of each measure and a summary of the associated savings.

Recommendations	Energy Savings	Peak Demand Savings	Cost Savings	Incentive	Installed Cost	Simple Payback w/ Incentive
Interlock Cooling Tower Separator Pumps with Cooling Tower Operation and Operate during Off-Peak Hours	114,698 kWh/yr	15 kW	\$15,622/yr	\$11,426	\$10,004	Immediate
Install Variable Frequency Drives on Hot Water Pumps	57,918 kWh/yr	8 kW	\$7,888/yr	\$4,633	\$13,938	1.2 years
Install Variable Frequency Drive on Condenser Water Pumps	135,172 kWh/yr	0 kW	\$18,410/yr	\$10,814	\$43,500	1.8 years
Install Variable Frequency Drive on Secondary Chilled Water Pumps	104,347 kWh/yr	11.9 kW	\$14,212/yr	\$10,134	\$58,969	3.4 years

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