



FACILITY REPORT

ENERGY CONSUMPTION & COST SAVINGS REVIEW

Underpinned by a comprehensive review of documented evidence, the aim of this report is two- fold: to build knowledge and understanding of the nature and scope of the multiple benefits of energy efficiency, and to provide Customer' management team with practical guidance on how to apply policy development and assessment tools to account for these impacts. The combination of theory and practice will help management integrate multiple benefits into strategic planning in order to maximize the potential for positive short and long-term energy management outcomes.

Facility:

Milpitas, CA. Facility

Project Summary

This facility energy report summarizes the results of the company's proprietary hardware and software technology solution implementation at Customer's facility in Milpitas, California. During each one hour 'OFF' and 'ON' meter test at the facility's MAIN switch gear, our engineers measured the power quality conditions of the facility for kW Peak, Demand, Amp Draw, Voltage, kVAR and power factor. Our engineers set up the facility-wide test during the peak time of the day where higher loads were anticipated for measurement. Since the utility company bills Customer based on peak kW and peak kVAR (Power Factor) readings, the peak operational period is the best time to perform a facility-wide, 1 hour 'OFF' and 1 hour 'ON' test to measure the reductions in consumption.

The project's energy savings have been achieved by improving the operating efficiency of the inductive load equipment in the facility and creating efficiency improvements across all electrical circuits by installing our 'current-balancing' technology that is designed to tune 60-hertz frequency signals to reduce energy consumption.

We have created a scientific methodology to conduct research and data analysis for energy efficiency projects supported by an evaluation, measurement and verification (EM&V) protocol that quantifies energy savings in commercial and industrial facilities.

When our equipment was turned 'ON' in the Milpitas Xerox facility, the facilities current flow characteristics have improved in the following categories and reduced the overall energy consumption and costs: Lower Amp Draw, Lower KVA, Lower KVAR, Lower KW Peak, Lower KWH, and improved Power Factor efficiency in the facility.

The subsequent electric bill indicated a **90% Power Factor efficiency** rating for the facility. Our solution has raised the efficiency level in the facility, and it is now operating at a **99.6% Power Factor efficiency rating**. Due to the newly improved efficiency rating it was appropriate for us to introduce the appropriate Customer sustainability representative to the U.S. Department of Energy's 'Green Building Tag' division in order to obtain official certification for the facility.

Later a PowerScout24 Sub-Meter was installed for the purpose of identifying load consumption in specific departments within the facility. Each department was established according to each 'MAIN' circuit in the facility. The departments designated for measuring load consumption are as follows;

1. **Assembly line equipment**
2. **Compressors used in production**
3. **HVAC equipment**
4. **Chambers**
5. **Cooling Tower**
6. **Miscellaneous consumption (i.e., 208V Buss Duct for testing, café, lighting and all 110V usage.**

This report was especially significant to understanding the potential role our engineers can play to assist Customer's staff in redefining or reestablishing corporate sustainability policies and fulfilling annual goals for current and future energy management program cycles.

This report was based on the actual results of electricity consumption and savings as recorded by our energy specialists, engineers and staff during post-installation testing. Comparisons between the consumption levels and the actual savings are made throughout this report. It is important to note that our goal was to **maximize the reduction of energy consumption** and to **increase operational efficiencies** throughout the entire facility.

The energy savings are based on the detailed data gathered using our 'Real Time' metering portal. Our engineers have diligently gathered metering data to ensure that the qualified savings are consistent and have reviewed the data for accuracy to verify the savings so that Customer management may include the data in its overall corporate sustainability results.

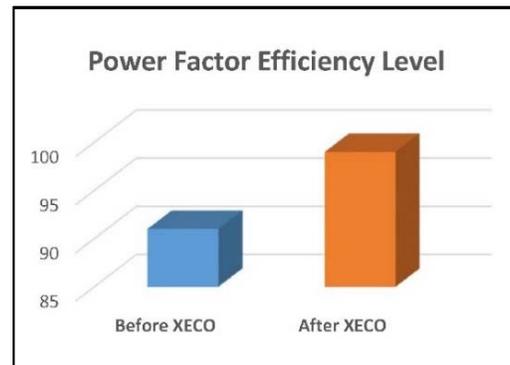
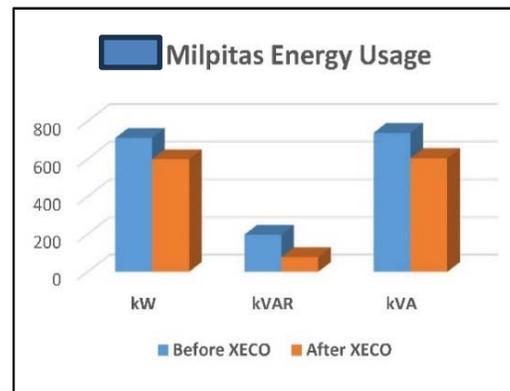
This report fully details our engineering analysis of data gathered directly from the PowerScout24 Submeter during a fundamental 'ON/OFF' live test. Each device includes a load controller to remotely turn all of our equipment 'ON' and 'OFF' to verify energy savings. Our metering software portal is wirelessly connected to each 'Load Controller' device in the facility for managing the 'ON' and 'OFF' switch controls.

The collected data was time/date stamped in order to ensure the accuracy and verification of all readings taken directly from the PowerScout24 Sub-meter.

Departmental Consumption & Saving Breakdowns

Our equipment is designed to tune and current-balance total loads in a facility's electrical network. It is important to note that energy saving measurements may only be taken once all circuits in the electrical network of a facility have been addressed. Because our equipment is considered a tuning/signaling technology solution for 50 or 60 hertz loads, proper measurements may only be obtained after the system has been 'live' for approximately 1 hour in order for the electrical network to adapt to the load balancing properties of our technology. Once the system has been live for 1 hour test data can be gathered and compared to the data gathered after our equipment has been turned off for 1 hour.

Raw data has been extracted directly from the meter through our portal and is considered to have no breach in its integrity. Because loads are continuously varying on each circuit and therefore the entire network, it is important to compare the time/date stamp from 'ON' then 'OFF' rather than from 'OFF' then 'ON' in order to determine accurate savings with our equipment installed.



The time/date stamp from 'OFF' to 'ON' does not represent an accurate measurement of 'before' and 'after' savings in the entire facility due to the fact that the signal our technology creates in a facility's electrical network requires time to balance the current flow and improve the physical operational characteristics of the equipment creating the demand for electricity in the facility, approximately 15 to 20 minutes depending on the size of the load in the facility. The same principal is true when our equipment is turned OFF in the facility. There is a 15 to 20 minute period during which the signal created by our technology dissipates and the imbalances in the current flow return along with the inefficiencies of the equipment operating on the electrical network.

The following measurements and results from the PowerScout24 Sub-Meter has been recorded below;

1. Full facility measurement
2. Phase measurements
3. Departmental consumption measurements

Facility: Milpitas, California (Bldg #06)								
Sub-Meter Facility Portal (Live Meter Test)								
Data source is available upon request and may be imported directly from the ElitePro or PowerScout24 meter installed.								
MAIN	Time/Date Stamp	kW	PF%	kVAR	kVA	% Consumption	SAVINGS	
	Xeco ;'OFF'	11/11/2015 9:03	711	91	197.8	738	100.00%	15.75%
	Xeco 'ON'	11/11/2015 9:02	599	99	77.56	604		
			15.75%	8.79%	60.79%	18.16%		
ASSEMBLY 1	Time/Date Stamp	kW	PF%	kVAR	kVA	% Consumption	SAVINGS	
	Xeco ;'OFF'	11/11/2015 9:03	38	-67	43.82	58	5.34%	0.00%
	Xeco 'ON'	11/11/2015 9:02	38	-32	43.82	58		
			0.00%	-52.24%	0.00%	0.00%		
ASSEMBLY 2	Time/Date Stamp	kW	PF%	kVAR	kVA	% Consumption	SAVINGS	
	Xeco ;'OFF'	11/11/2015 9:03	55	100	10.54	56	7.74%	23.64%
	Xeco 'ON'	11/11/2015 9:02	42	100	0	42		
			23.64%	0.00%	100.00%	25.00%		
COMPRESSORS	Time/Date Stamp	kW	PF%	kVAR	kVA	% Consumption	SAVINGS	
	Xeco ;'OFF'	11/10/2015 12:18	108	81	66.82	127	15.19%	24.07%
	Xeco 'ON'	11/10/2015 12:17	82	86	58.86	93		
			24.07%	6.17%	11.91%	26.77%		
HVAC	Time/Date Stamp	kW	PF%	kVAR	kVA	% Consumption	SAVINGS	
	Xeco ;'OFF'	11/11/2015 9:03	111	68	97.92	133	15.61%	18.92%
	Xeco 'ON'	11/11/2015 9:02	90	91	50.63	122		
			18.92%	33.82%	48.29%	8.27%		
CHAMBER 1	Time/Date Stamp	kW	PF%	kVAR	kVA	% Consumption	SAVINGS	
	Xeco ;'OFF'	11/11/2015 9:03	43	92	16.34	46	6.05%	0.00%
	Xeco 'ON'	11/11/2015 9:02	43	92	16.34	46		
			0.00%	0.00%	0.00%	0.00%		
CHAMBER 2	Time/Date Stamp	kW	PF%	kVAR	kVA	% Consumption	SAVINGS	
	Xeco ;'OFF'	11/11/2015 9:03	49	97	9.95	50	6.89%	0.00%
	Xeco 'ON'	11/11/2015 9:02	49	97	9.95	50		
			0.00%	0.00%	0.00%	0.00%		
COOLING TOWER	Time/Date Stamp	kW	PF%	kVAR	kVA	% Consumption	SAVINGS	
	Xeco ;'OFF'	11/11/2015 9:03	32	88	16.49	36	4.50%	-3.13%
	Xeco 'ON'	11/11/2015 9:02	33	94	11.66	35		
			-3.13%	6.82%	29.29%	2.78%		
MISCELLANEOUS	Time/Date Stamp	kW	PF%	kVAR	kVA	% Consumption	SAVINGS	
	Xeco ;'OFF'	11/11/2015 9:03	275	88	16.49	232	38.68%	19.27%
	Xeco 'ON'	11/11/2015 9:02	222	94	11.66	158		
			19.27%	6.82%	29.29%	31.90%		

Source data: Above numbers were collected directly from the ElitePro and PowerScout24 meters and are available upon request or may be downloaded directly from the Xeco Meter Portal.

NOTE: Negative numbers shown in the above chart indicate 'Leading' Power Factors and Circuits should be inspected for potential motor failure.

Heat Reduction in Equipment

Heat reduction in motors are known to improve performance and life expectancy. IEEE Standard 112 has become an industry standard for testing and measuring heat in motors. Our hardware and software solution has proven the reduction of reactive energy in the **Milpitas facility by 60.79%** for inductive loads such as HVAC, production equipment or other motorized equipment. The reduction of reactive energy resulted in improved current flow at 60 hertz as well as reduce the thermodynamic characteristics in motor configurations plant-wide. Although it is expected that heat has been reduced in some or all of the motors in the Milpitas facility due to a 60+% reduction in reactive energy, a thermodynamic test has not been performed in the plant at this time.

Predictive Failure in Equipment Based on Data

Our advanced metering and alert system has been installed in Customer's Milpitas facility to monitor power quality conditions. The system has specifically designed characteristics to detect equipment abnormalities by monitoring the energy demand of certain systems and devices. Monitoring, tracking, and analyzing device-level energy consumption data is much easier and less expensive than most realize; and the benefits of such granular data are immense.

Also, a wireless load controller has been installed with each device for controlling each power connection and to aggregate the data through switch gear and circuit metering, along with a cloud-based analytics engine, to allow management to monitor, track, benchmark, report, and detect anomalies, all in real-time.

For example, a compressor that has begun to cycle more frequently than usual or is out of sync with the external temperature or humidity, will display an energy profile that is characteristic of a particular failure mode. Or, if a conveyor motor overloads and trips out it can create a costly bottleneck in the production process. Correcting these anomalies can increase operational efficiency and productivity, and it can also optimize and reduce energy consumption.

More subtly, however, is when machinery begins to draw more and more electrical power. This upward slope, be it gentle or steep, is perceptible and can be monitored by real-time circuit metering. If a belt or bearing is causing this increasing draw an alert notification could be triggered through our Energy Portal.

A data-driven shift from planned maintenance, which is costly and time consuming (often unnecessarily so), to a predictive maintenance model, which is based on real-time, device level data that enables management to better predict equipment failures, has the potential to generate significant operational and financial benefits. By basing maintenance, repair, and retrofitting projects on the data that can determine which actions are truly required can save Customer both time and money.

Alert Monitors for Operation Managers

Our Energy Portal is designed to monitor 'real-time' consumption, while providing the necessary tools for management during busy times of the day or night. Our Energy Portal includes a 'real-time' alert system for immediately notifying operation managers or other personnel when there are equipment or circuit outages, unusual levels of energy usage and overages, excessive peak usage, unusual power factor conditions caused by machine failure, and more.

Alert Instances may be set for;

1. **HIGH METERED DEMAND** for setting minimum wattages for down times to insure personnel 'powers down' unused equipment after hours or specific times of the day.

- LOST COMMUNICATIONS** for notifying management when equipment or circuits are down. This feature is critical when equipment must be left operating continuously.
- LOW POWER FACTOR** for notifying management when equipment or circuits are operating at unusual power factors caused by motor failures or high demand usage, 'leading' PF conditions caused by over-capacitance while machines are not in use or other mechanical failures that may cause unexpectedly higher energy usage.

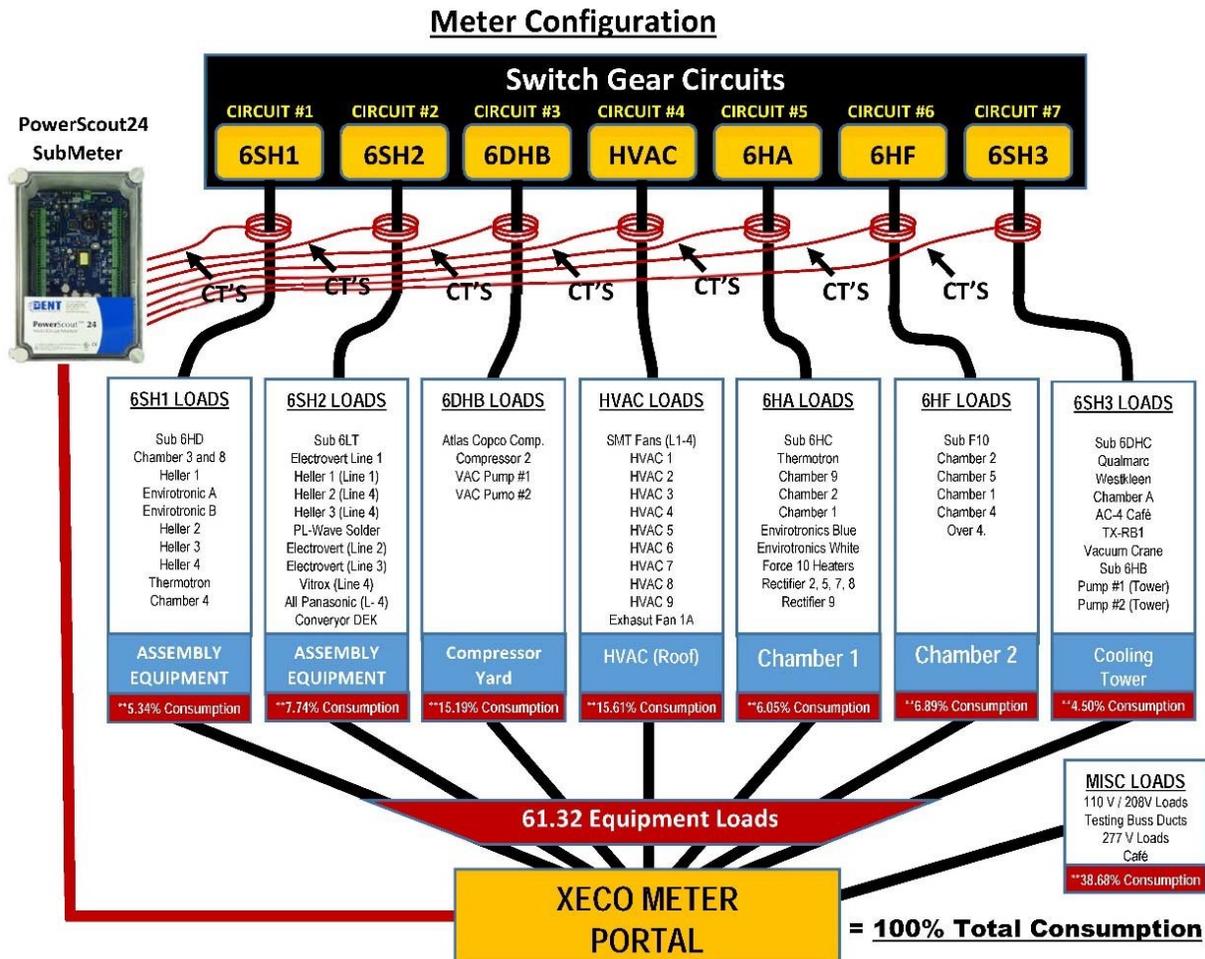
Power Quality Reports and Date Ranges

Our portal allows for a general report to be generated for all metered usage in occupied and unoccupied times within a given date range.

PowerScout24 Sub-Meter Application

The benefit of connecting the Powerscout24 meter is that it's a revenue-grade meter designed to measure up to 8 independent circuits within each Switch Gear. The benefit in the Milpitas Building 6 facility is to have the capability to separate and break download consumption within a facility.

Building M6 facility's Switch Gear is wired as follows;



NOTE: Misc. loads represented above are made up of 110v, 220v, 277v and Testing Buss Ducts in the facility. Lighting loads are less than 10% of the total load in the M6 facility. Each circuit may include small lighting loads as well and may be identified during installation or metering.

STRATEGIC BENEFITS: The installation of the PowerScout24 Meter will enable Analysts to evaluate targeted load consumption in the facility for departmentalizing electricity usage and costs, to enable better forecasting and project job costing efforts.

Customer's Milpitas Project Highlights

This report highlights several areas of energy savings and efficiency improvements in the Milpitas facility which are also designed to help encourage investments in energy efficiency projects in other Customer facilities. The following is a listing of the project highlights to date:

- Our energy management hardware and software solution has produced energy savings for the facility in the amount of **\$8,734.62** per month based on consumption levels during the test period.
- Our solution has improved the Power Factor efficiency level from 90% to 99.6%.
- We have created a methodology for Customer using a real-time audit process to calculate savings and identify additional opportunities for cost reductions within the facility.
- Our engineers expect to continue using the evaluation, measurement and verification
- Deployed (EM&V) process to quantify savings in the facility.
- The installation of our equipment has generated an increase in the operational efficiencies of facility lighting and other inductive load equipment resulting in reduced maintenance and repair costs.
- Customer' energy management programs utilizing our solution are achieving corporate policy goals and reducing CO2 emissions globally.

Customer's Milpitas Project ROI

I. Annual Projected Metered Savings for Milpitas, CA facility are as follows:

- The total 12-month '**Cost-of-Bill**' savings for Customer' Milpitas facility is **\$104,815.43**
- Based on the total cost for the project, the **R.O.I. is 16 months.**
- The Kilowatt Hour usage has been reduced by **10.00% or 50,528 KWH's.**
- The '15-Minute KW Average' usage (KWH) has been reduced by **9.45% or 89.6 Kilowatts (KW).**
- The KW Peak (Demand) has been reduced by **4.55% or 36.9 Kilowatts (KW).**
- The KVAR has been reduced by 30.42% or 158.31 kVAR's.
- The Carbon Emission Reduction is **428 Metric Tons** of Carbon Dioxide annually.

II. Customer' Tax Deduction Benefit:

The project has proven and documented energy savings for the reduction in consumption through-out the facility resulting in KW savings. The Customer facility is approx. 180,000 sq. ft. and if the partial available tax credit is \$0.60 per square foot, then the gross amount of the partial tax deduction is approximately \$108,000, but would only be allowed up to the total cost of the Project or \$154,531.63;

ASHRAE Standard 90.1-2001

'A tax deduction of up to \$1.80 per square foot is available to owners or designers of new or existing commercial buildings that save at least 50% of the heating and cooling energy of a building that meets ASHRAE Standard 90.1-2001. Partial deductions of up to \$.60 per square foot can be taken for measures affecting any one of three building systems: the building envelope, lighting, or heating and cooling systems. These tax deductions are available for systems "placed in service" from January 1, 2006 through December 31, 2013.

NOTE: This Tax Code was extended for 2014 and is expected to be extended again for 2015. Check with a tax specialists prior to taking a tax deduction.

Recommendations

- Implement our 'current balancing' equipment in all Customer facilities.
- Network all facilities equipped with our hardware and software solution to the same wireless software portal for management of the consumption per campus, city, state, country and the entire corporation as deemed appropriate.
- Continue using our analytics and EM&V process to achieve additional energy savings in other Customer facilities.

Potential Impact of a Corporate-wide Solution Implementation

- Our energy management solution can be implemented in all Customer facilities.
- We will use our EM&V methodology to determine the specific electricity savings for each Customer facility.
- Although the actual savings in each facility will vary, the following assumptions are being made based on the results generated at the facility:
 1. **Assumption #1 (Best Case Scenario)** – an average facility savings equal to the actual annual savings at Milpitas (Bldg. #6) of **\$104,813.43** is equal to **\$.6368 per square foot**. Since Customer has manufacturing operations in over 30 countries, totaling approximately 27.2 million square feet and 200,000 employees, the estimated savings with our implementation across all Customer facilities is approximately **\$17,320,960** per year.
 2. **Assumption #2 (Minimum Case Scenario)** - an average facility savings equal to 50% of the actual annual savings at Milpitas (Bldg. #6) of **\$57,306.81** is equal to **\$.3184 per square foot**. Since Customer has manufacturing operations in over 30 countries, totaling approximately 27.2 million square feet and 200,000 employees, the estimated savings with our implementation across all Customer facilities is approximately **\$8,660,480** per year.
 3. **Assumption #3 (Worst Case Scenario)** - an average facility savings equal to **25%** of the actual annual savings at Milpitas (Bldg. #6) of **\$28,653.40** is equal to **\$.1592 per square foot**. Since Customer has manufacturing operations in over 30 countries, totaling approximately 27.2 million square feet and 200,000 employees, the estimated savings with our implementation across all Customer facilities is approximately **\$4,330,240** per year.

In summary we were able to provide Customer management with a comprehensive analysis of the use of electricity in each of its other facilities as well as a definitive cost reduction project plan. Implementation of our solution may result in an annual corporate cost reduction of between **\$4,330,240 (25%), \$8,660,480 (50%), and \$17,320,960 (100%)** based on the assumptions used herein derived from the results achieved at the Milpitas (Bldg. #6) facility.

The above Facility-Wide Energy Report for Energy Consumption and Cost Savings review has been prepared on behalf of Customer Executive and Finance Staff at the Milpitas, Ca. (Bldg. #6) facility.

Sources

- **PG&E Electric Bill (May 16, 2014)**
- **Dent Instruments ELITEpro Data Logger**
- **PowerScout23 Sub-meter and data collection**
- **Bill Analysis (EM&V Engineering Protocol)**
- **Incenergy Energy Management Controls and Software**