Sample Report

Utility Submetering Report

foresight

EXECUTIVE SUMMARY

This report consists of four parts:

PART #1 – SCOPE OF WORK

This section discusses all the equipment included in the scope of work as well as methods and duration of the study. Utility costs are also covered.

PART #2 – GENERAL USAGE GRAPH & EXPLANATION OF USAGE

Electric usage of each piece of equipment was graphed over the entire timeframe of the study. Foresight Management also highlights any anomalies or points of interest for each graph.

PART #3 – RELATIVE ENERGY USE, COST, AND HOURS OF OPERATION TABLES

This section breaks out important operation metrics for each piece of equipment measured.

PART #4 – CONCLUSIONS

This section concludes the report and discusses opportunities to reduce cost and energy consumption.

PART #1 – SCOPE OF WORK

- Report detailing the findings of the temporary meters, including:
    - Hours of operation for each circuit/piece of equipment
    - Monthly kWh consumption for each circuit/piece of equipment
    - Monthly cost to operate each circuit/piece of equipment
    - Graphs and tables showing use

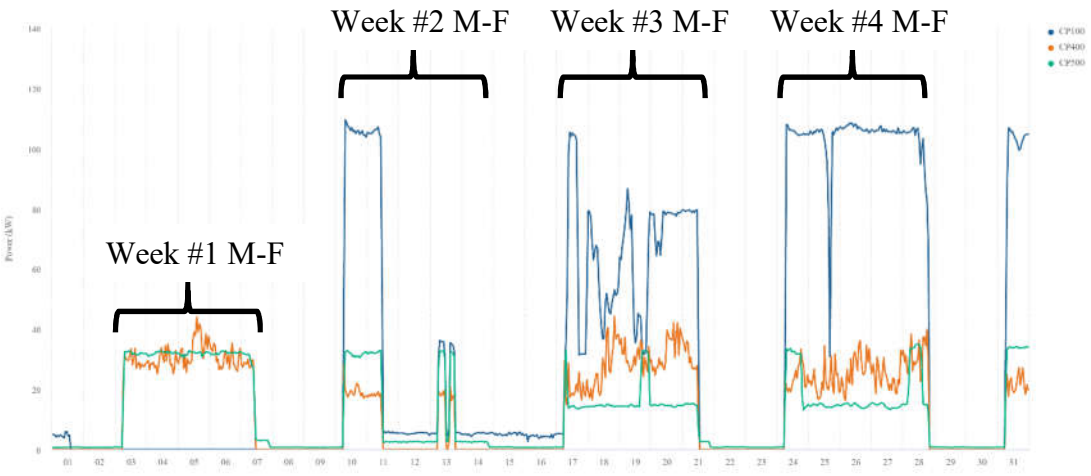
Foresight Management analyzed a total of 3 different power panels dedicated to the "ECP5" (Paint Booth) in Plant 5. Each panel has different equipment attached to them such as lighting, fans, motors, etc. This report will be a summary of all the equipment tied to each panel. Panoramic Power meters were exclusively used for monitoring electricity use. These meters had current transducers (CTs) that wrapped around the wire to measure current going through the wires. We then entered the voltage of the system and the Panoramic power software calculated demand (kW) and consumption (kWh). Meters were installed on July 31st, 2020 and the report is based on four weeks of usage (August 1st to August 30th).

All costs called out in this report are based on ABC Company's blended rate of about $0.XXX/kWh.

Plant 5
CP-100
CP-400
CP-500

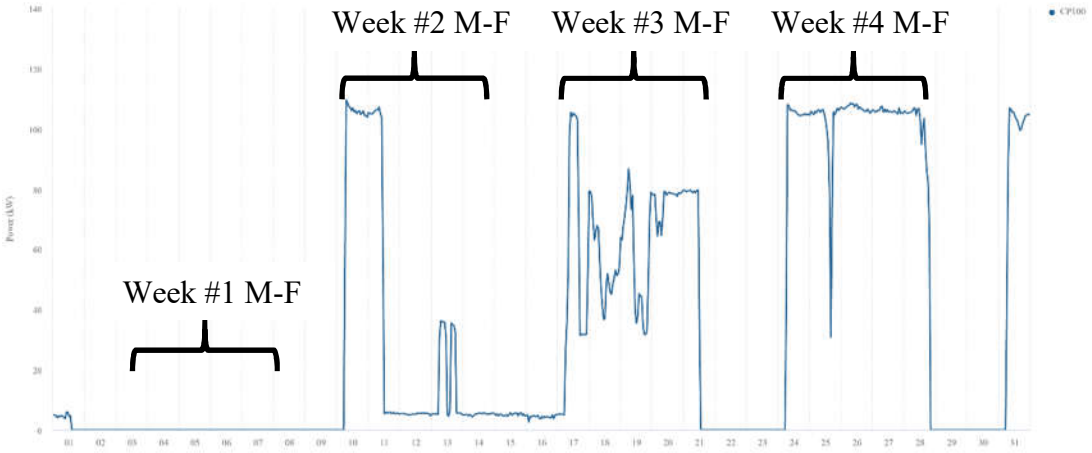
PART #2 – GENERAL USAGE GRAPH & EXPLANATION OF USAGE

PLANT 5 [redacted] ALL EQUIPMENT SUMMARY



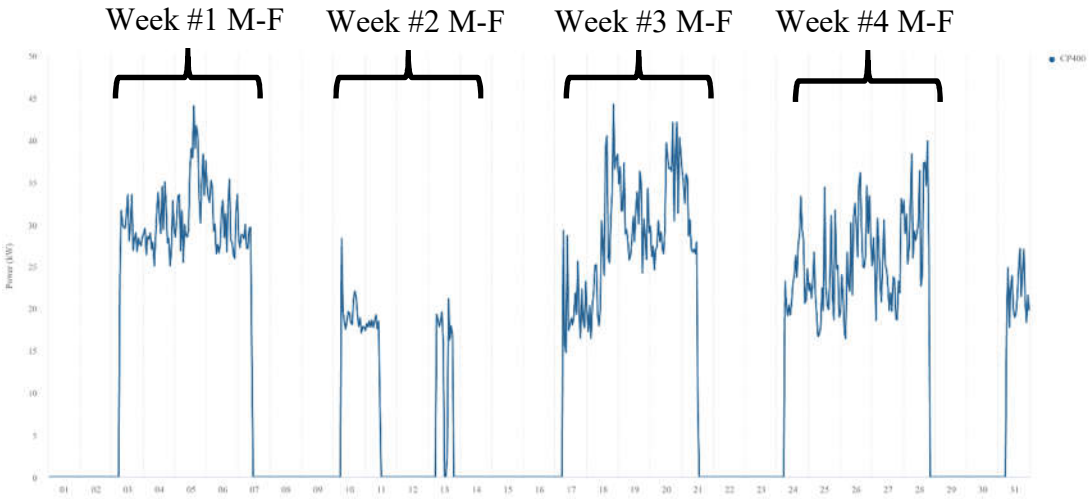
The metered equipment CP100 had inconsistent operation (off during week #1, partial power during week #2, half power during week #3, and full power during week #4), the others were consistent. Additionally, there was one instance where CP100 was not turned off on Friday when the plant was not operating, and it ran during the weekend of August 15th. During the study, it was noticed that all the equipment was turned on, then off, then back on again on Thursday August 15th, but was not operating for very long. It was possibly on standby from Wednesday to Friday of that week, and not on at all during the first week of the study. It is possible an operator started the process and then shut it down early because of no scheduled production for those days. Make sure the equipment is turned off, unless this was a planned partial production shift, and confirm if the inconsistent operation in CP100 was expected.

CP100 POWER PANEL



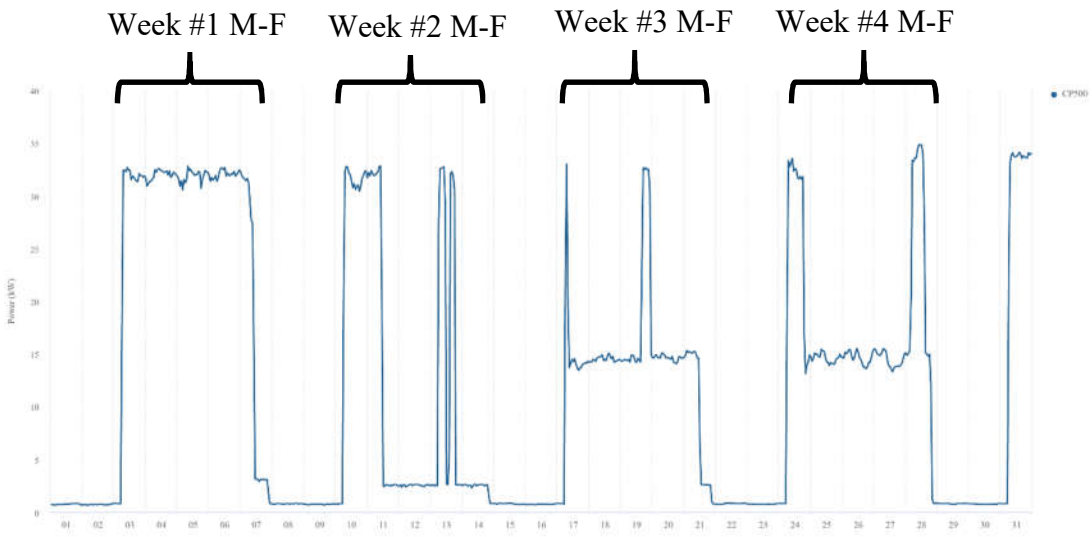
The metered CP100 power panel had the highest consumption operation, other than a minor shut down period on Wednesday, August 12th to Monday, August 17th, with electric costs of approximately $180 over the course of the study. During the week of August 17th (Week #3) the consumption pattern was significantly different than the following week, consuming only about half the electricity compared to the week of August 24th. This could be worth investigating further to determine the production patterns each week to determine if this was expected. Of all of the equipment included and measured, this group of equipment is the most expensive to operate, costing over $32,000 per year, 4x more than the others due to the high demand.

CP400 POWER PANEL



The CP400 power panel runs consistently throughout the week and shut off when not in use. It has a similar pattern to the CP100, where there was minor use during the second week of tracking and a brief start up on Thursday, August 13th.

CP500 POWER PANEL



The metered CP500 power panel had a minor shut down period on Wednesday, August 12th to Friday, August 14th (like CP100). It was left on for a few days, apparently in standby mode, at a cost of approximately $80 over those 3 days. This should be investigated further to determine what was going on during each week of the study to determine if the variation was expected. If this was not expected, then Foresight Management would recommend shutting down completely when not in use. While the cost may seem insignificant, the wear and tear on equipment is not necessary and could lead to more maintenance costs if the behavior happens often.

PART #3 – RELATIVE ENERGY USE, COST, AND HOURS OF OPERATION TABLES

Findings Based on One Month of Data

The table below demonstrates the relative percentage of cost by equipment type. The table also breaks out energy use, demand, cost to operate, and hours of operation monthly and annually for all the equipment that was monitored. This table is based on the full month of data collected.

	Monthly				Annual		
	kWh	Max Demand	Cost	Oper. Hours	kWh	Cost	Oper. Hours
CP100	19,424	118	$2,467	183	252,507	$32,068	4,680
CP400	4,879	47	$620	188	63,428	$8,055	2,461
CP500	4,232	35	$538	451	55,020	$6,988	5,859
- Total	**28,535**	**200**	**$ 3,624**	**822**	**370,955**	**$ 47,111**	**13,000**

The annual usage and cost of the equipment measured for this project was 370,955 kWh and $47,111. Over the 12 months from May 2019 to April 2020, the total electric usage at Plant 5 was about 10,889,941 kWh and costs were $1,385,102. This means the measured **equipment accounted for about 3.4% of all the usage and cost in the facility.**

Findings Based on Week #4 of Data Collected

The fourth week of the month in question was the most representative of how EPC5 actually operates. The below table is based only on that week instead of the full month:

	Monthly				Annual		
	kWh	Max Demand	Cost	Oper. Hours	kWh	Cost	Oper. Hours
CP100	45,336	113	$1,919	439	589,368	$74,850	5,707
CP400	11,264	48	$477	439	146,434	$18,597	5,707
CP500	8,251	36	$349	672	107,258	$13,622	8,736
- Total	**64,851**	**197**	**$ 2,745**	**1,550**	**843,061**	**$107,069**	**20,150**

The annual usage and cost of the equipment measured for this project was 843,000 kWh and $107,000. This means the measured equipment likely accounts for closer **to 8% total electricity consumption of the facility.**

CP 500 VFD Savings

CP500 powers the majority of the blower motors which all have VFDs installed. Looking at Week #4, the VFDs functioned as designed – kicking to full power at startup and then turning down when not needed. P&W should ensure that the motors and VFDs continue to function in this manner as it **saves about 60,000 kWh and $8,000 per year**.

PART #4 – CONCLUSIONS

The top three equipment to investigate are as follows:

1. The panel identified as CP100 had inconsistent operations. This should be investigated further to determine what was going on each week to determine if this can lead to savings. Understanding what equipment is associated with this panel and how it correlates to production volume would be helpful in determining if there are further savings to investigate. If this variation is expected, then no further action is required.

2. In general, all the power panel equipment on CP100 operates longer and at more cost than the other measured equipment, four times more. Therefore, this is the panel to focus on for further investigation as to what equipment is causing the high demand (up to 113kW) and the high cost to determine if savings can be realized.

3. CP500 equipment was left on for the same period as CP100. In a similar fashion, this should be investigated further to determine what was going on each week to determine if there are opportunities that would lead to cost savings. Week 4 the VFD functioned well and turned down the blower motors when they were not needed. The VFDs should be checked regularly to ensure that energy consumption is minimized.

We hope this document offers more visibility into how ABC Company operates the pieces of equipment in the facility. The goal is to provide you with the data necessary to make informed, strategic decisions, and we are able and willing to assist you in reducing energy consumption and costs. Please let us know how we can assist you in this endeavor.

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Follow-Up Questions / Meeting Notes / Action Items