

ET Summit 2019

Presented by



Variable Speed Drive Equipped Hydraulic Power Units

Soren Rasmussen
Managing Director
Green Hydraulic Power, Inc.



Industrial applications

For process manufacturing

Acknowledgements

Southern California Edison's Emerging Products (EP) group is responsible for this project. It was developed as part of SCEs Emerging Technologies Program under Internal project number ET18SCE1070. Paul Delaney conducted this technology evaluation.

Summary

SCE Customer Advanced Structural Technologies (AST), Inc. replaced existing hydraulic pump with a variable speed fixed displacement drive controlled pump manufactured by Green Hydraulic Power. SCE conducted pre data logging measurements. After the technology was installed, SCE conducted post data logging measurements.

One specific part was manufactured during the pre and post data logging periods. The part production data is given below. Each day AST manufactured an average of 55 total parts. The data was calculated to identify the total kWh, average kW, average kWh/part and savings.

Data Collected

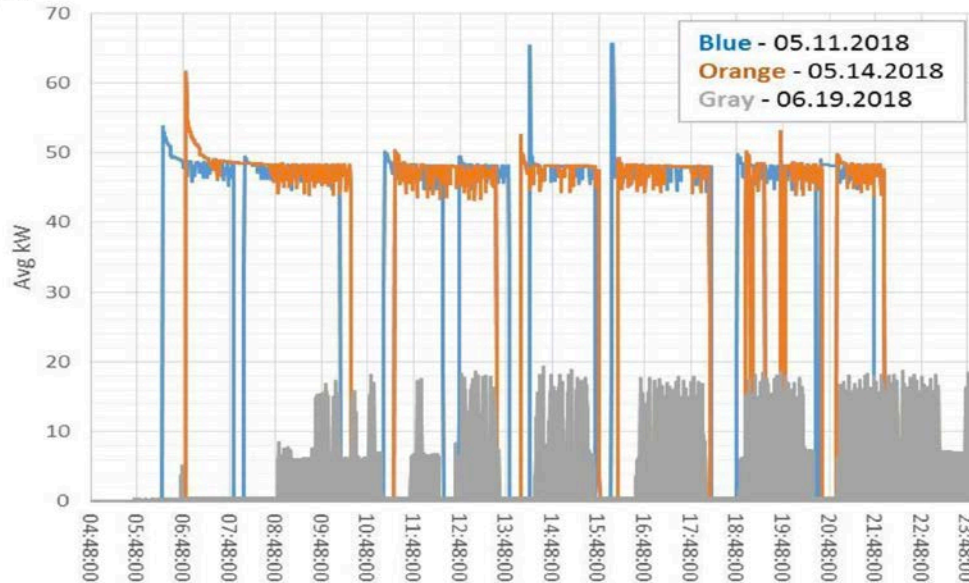
Date	Shift	Qty	kWh	Avg kW	kWh/part
5/11/2018	1	31	288.86	36.11	9.32
5/11/2018	2	26	310.10	38.76	11.93
total			598.956		
5/14/2018	1	30	278.64	34.83	9.29
5/14/2018	2	25	283.54	35.45	11.34
total			562.172		
6/19/2018	1	10	38.32	6.22	3.83
6/19/2018	2	42	82.66	9.18	1.97
total			120.982		

	kWh/part	Avg kW
Avg Pre	10.47	36.29
Avg Post	2.90	7.70
Savings	7.57	28.58
\$-Savings	\$0.91	\$4,287.46

*Incentive rates \$0.12/ kWh, \$150/kW

Pre & Post Operations

The demand kW profile comparing the pre (5/11 & 5/14) and post (6/19) operations is given below in the graph.



Solution Code

Program	Solution Code	Cents/kWh	Dollars/kW
PR-20874	Drive Controlled Variable Speed Hydraulic Power Unit	\$0.12	\$150.00

Conventional versus VSD Hydraulic Systems

Before:



After:



Benefits of variable-speed pump drives are paying off in applications including:

- Machining and metal forming equipment,
- Plastics and rubber machinery,
- Die casting machines,
- Pulp and paper machinery,
- Hydraulic test stands,
- Material handling equipment,
- and many other industrial applications.

Typical machines benefitting from using VSD equipped HPUs:

- Presses
- Expanders
- Press Brakes
- Injection Molding Machines
- Machine Tools: Spin Forming & Flow Forming
- Injection Machines
- Die Casting Machines
- Wood & Industries
- Bulk Material Handling
- Plastic Molding
- Industrial Process

This project was prepared by Southern California Edison (SCE) and funded by California utility customers under the auspices of the California Public Utilities Commission.

For more information, contact Paul Delaney at Paul.Delaney@sce.com

In the United States 60-65 percent of electrical energy is used to supply motors alone, of which 75 percent are on variable torque fan, pump, and compressor loads. Approximately 20 percent of the energy used in 40 million fixed electric motors in the United States could be saved by switching to variable frequency drives.

Soren Rasmussen

Managing Director

Green Hydraulic Power, Inc.

srasmussen@greenhydraulicpower.com

www.greenhydraulicpower.com