



CASE STUDY



EXECUTIVE SUMMARY

The Company was awarded a contract to install a Power Conditioning System for Unilever at its Sikeston Missouri production plant – one of the largest ice cream production facilities in the world. Unilever is an international consumer goods company, owning more than 400 consumer brands. The Missouri plant makes more than 33 million gallons of ice cream annually, as well as frozen novelty items for brands such as Breyers, Fruttare, Good Humor, Klondike and Popsicle.

In the initial assessment of the 800,000 square foot facility, it was determined that Unilever could greatly benefit from power conditioning. Specifically, the company was searching for ways to use less/spend less on power. They were also interested in improving the power being sent to major equipment – motors, pumps, compressors, assembly lines – that run 24/7.

Power conditioners add capacitance (stored charge) via a series of capacitors and MOVs. The units capture and store reactive power commonly lost to ground, then evenly puts it back into the system as it's needed. Power conditioners ensure equipment is running at optimum voltages, and prevent blips, spikes, sags and surges. This optimization extends the life of a facility's electrical infrastructure while reducing maintenance costs.

With a Power Conditioning System, Unilever's plant can expect improved energy efficiency, a reduction in energy demand, and improved resiliency and longevity of all infrastructure.



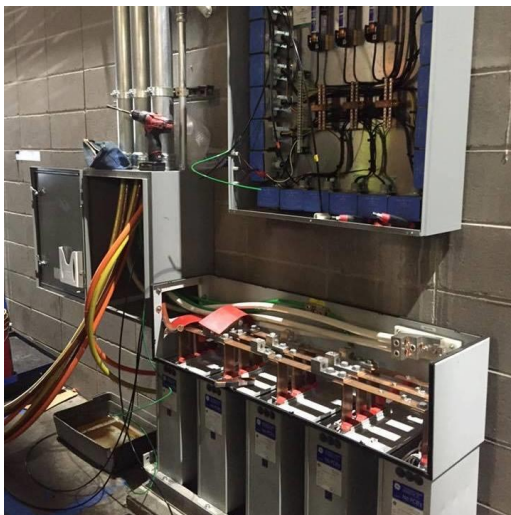
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Power Conditioning Benefits:

- Balances voltage across all phases (legs)
- Balances the load and line harmonics between phases
- Reduces Reactive Power loss
- Reduces spikes in your energy demand, lowering your peak demand charges
- Reduces device vibration, noise and HEAT (motors are more efficient & run cooler)
- Provides surge protection (absorbing power spikes up to 50,000 volts)
- Lowers lighting maintenance costs by extending the life of bulbs and ballasts
- Requires no special cooling or air-conditioned environment
- Helps protect computers, operating systems, timers, relays, burglar alarms, surveillance cameras and other low voltage equipment that is sensitive to power spikes or low voltage

EQUIPMENT & INSTALLATION

- The facility has three switchgear in total with a power bill of approximately \$300,000 each month. Three Power Conditioning Units were recommended for maximum effectiveness.
- September, 2016 – One 500 KVAR unit was installed
- September, 2017 – Two 500 KVAR units were installed.

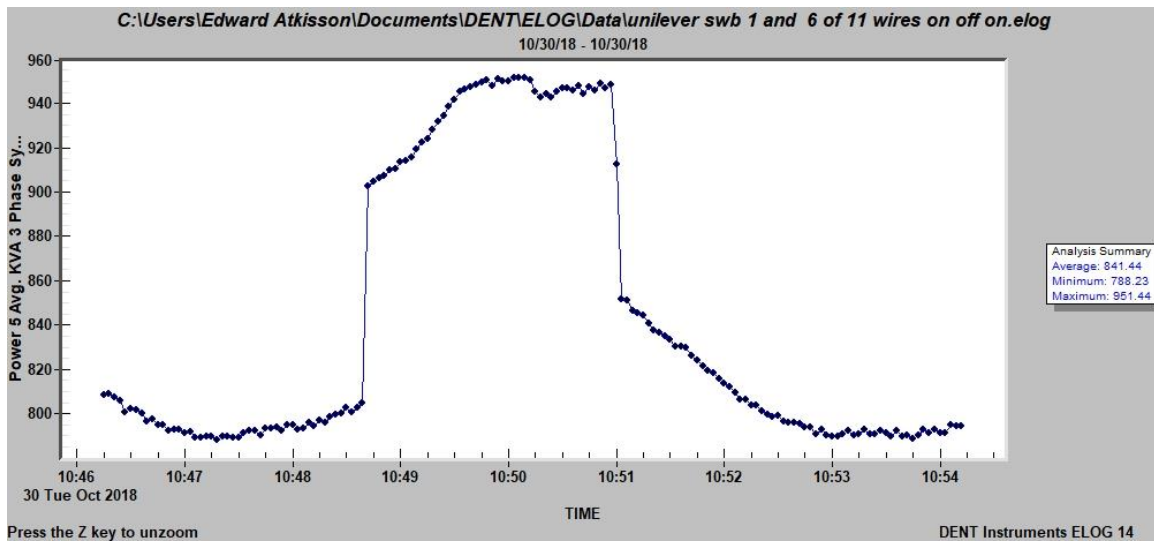




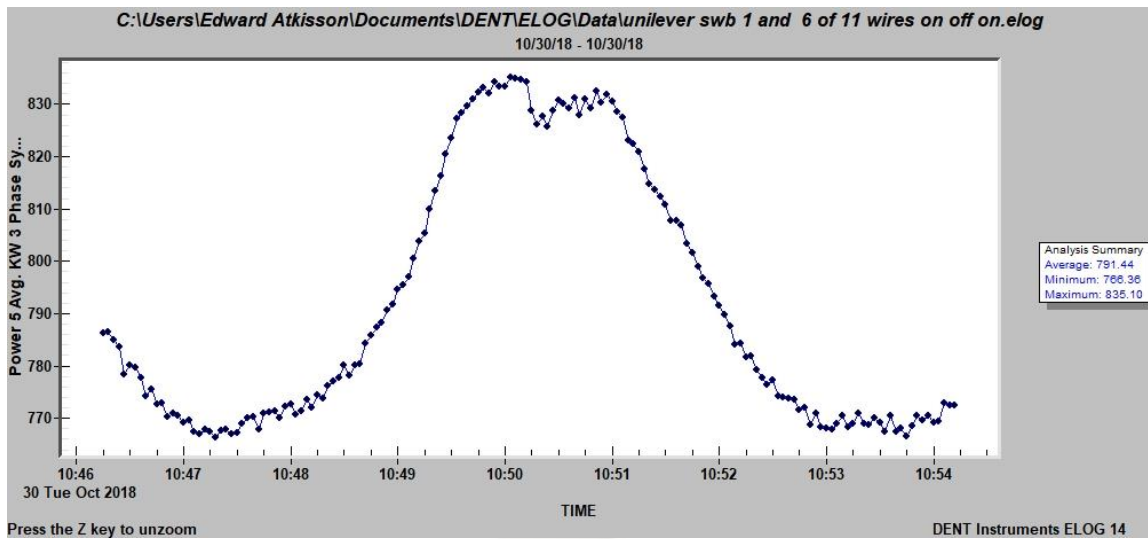
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INITIAL RESULTS

- KVA – Off then On



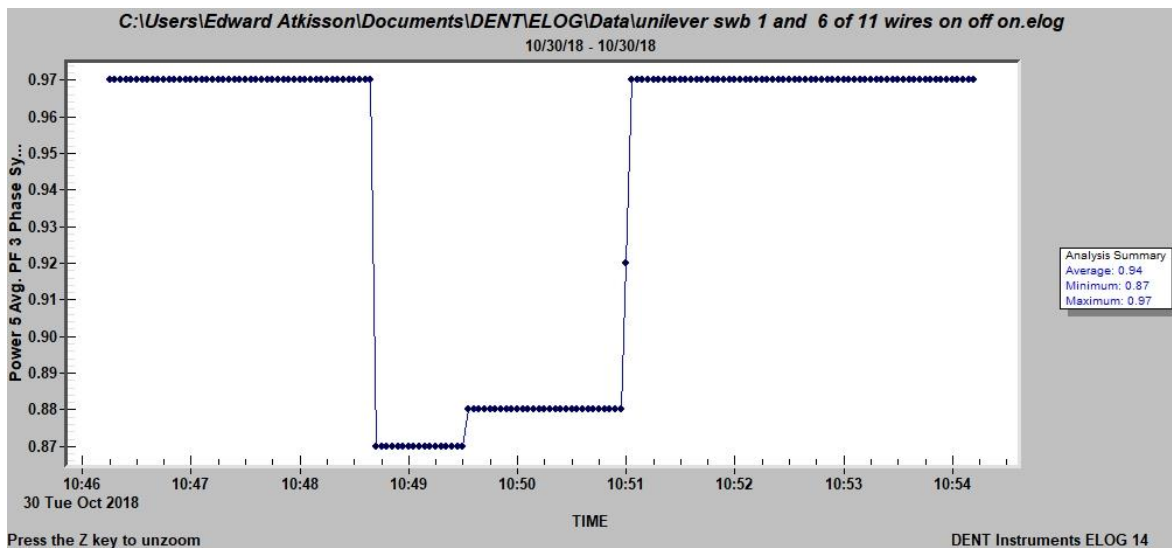
- KWH – Off then On



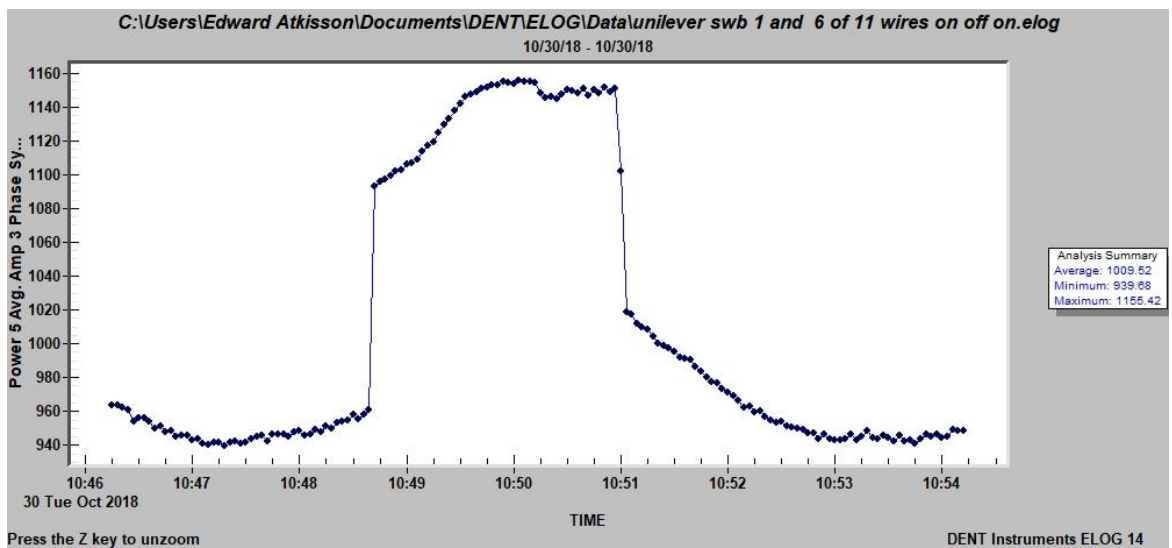


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- Power Factor Efficiency – Off then On



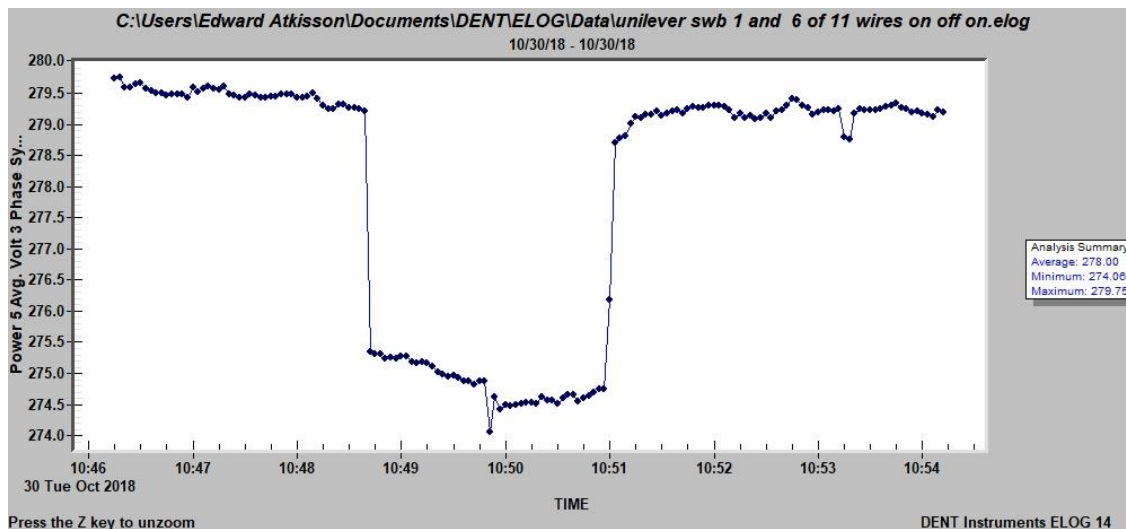
- Amperage – Off then On





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- Voltage – Off then On



- Power Factor improved from .87 to .97+
- Voltage increased from 274 to 279.5
- Amperage decreased from 1160 to 940: 15%
- KWH usage decreased from 835 to 765: 8%
- Demand spikes fell by 12% instantly

SUMMARY

- Based on the initial results of the first unit, Unilever is projected to realize an energy savings of 360,000 KWH per month.
- ROI was achieved in 12 months.
- 25-year savings = \$6.6 million (minus inflation)