

Evaluation of the MPTS Solution US GSA

April 8, 2013

Performance report

After installation of the MPTS 100, data-logging was carried out from March 21-28, 2013 and from April 2-4, 2013. The summarized results of the data recorded from the data-logging process for the pump-set at Building #67 are as follows:

- The electrical current consumption decreased from 52 amps to 41 amps; a savings of approximately 18 percent
- The KW savings equal 6.5 KWs
- The estimated annual KWHs savings equal: Conservative savings of 17,272 KWHs, Average savings of 21,590 KWHs, Aggressive savings of 37,351 KWHs
- The estimated annual dollar savings equal: \$1727.23 conservative, \$2,159.04 average, \$3,735.14 aggressive
- The efficiency (PF) improved from 0.80 - 0.82 all the way to 0.97 - 0.99

Maximum energy savings in AMPS, KW and KWH occur when our solution is deployed on high energy consuming inductive loads such as RTUs, HVAC chillers, motors in pumps, fans, etc. In addition to energy savings, the energy efficiency improvement will be greater than 97 percent as seen in the trial unit that was installed in Building #67.

The analysis report and the data from the data-logging process are attached.

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ENERGY EFFICIENCY AND SUSTAINABILITY

Project for Evaluation:

Install the MPTS Energy Efficiency Solution at GSA/Federal Center Building for evaluation

The electrical load that is selected for the evaluation is as follows:



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ENERGY EFFICIENCY AND SUSTAINABILITY

Project for evaluation:

Existing Volts, Amps and Power Factor for the selected pump-set are as shown in the tables below:

Daily average Data for the selected pump for evaluation of energy savings

Daily Average	Voltage L1N Avg	Voltage L2N Avg	Voltage L3N Avg
Daily Average	279.94	282.96	277.75

Daily Average	Current L1N Avg	Current L2N Avg	Current L3N Avg
Daily Average	50.98	49.28	50.69

Daily Average	Current NG Avg	Frequency Avg
Daily Average	0.00	59.99

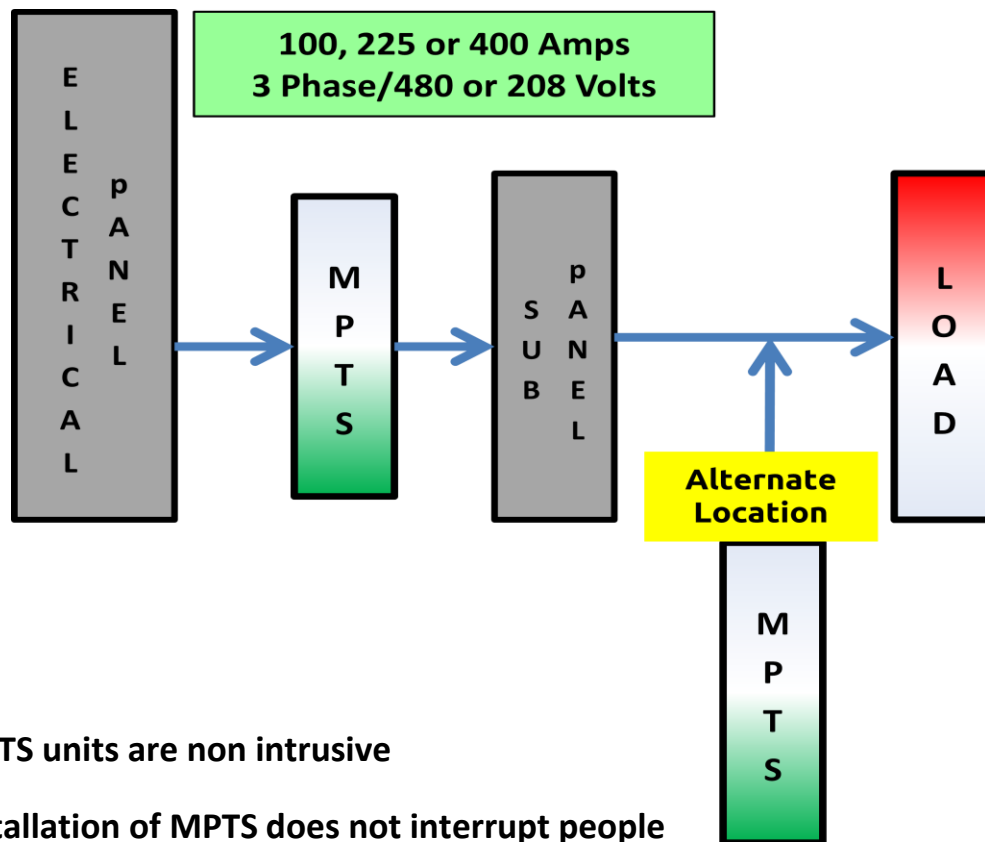
Efficiency	Line 1	Line 2	Line 3
Power factor	PF1	PF2	PF3
Daily Average	0.82	0.85	0.87



ENERGY EFFICIENCY AND SUSTAINABILITY

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How are the MPTS units installed?



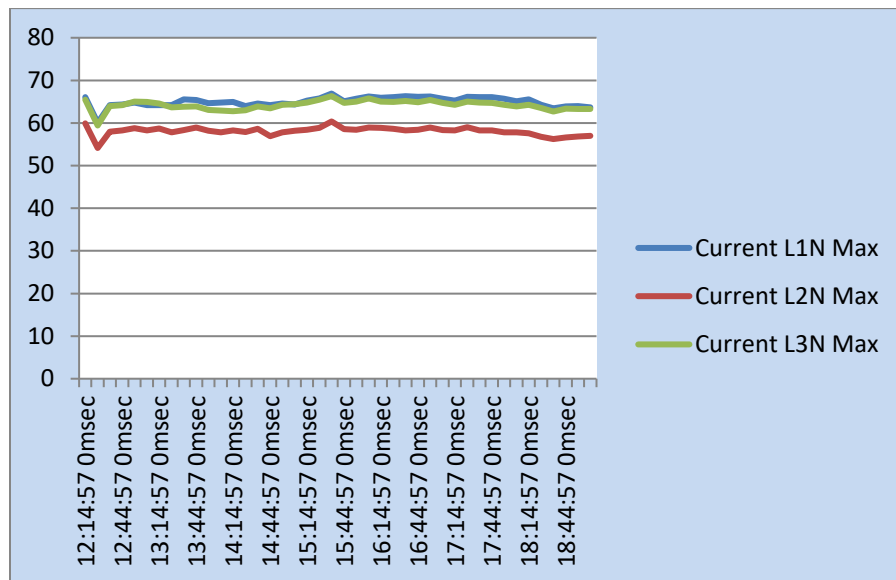
- MPTS units are non intrusive
- Installation of MPTS does not interrupt people in the workspaces
- The Control devices are “Fail Safe”
- The power to the load or equipment is not interrupted even when the MPTS unit is not working
- Manufacturer’s Warranty is 3-years

ENERGY EFFICIENCY AND SUSTAINABILITY

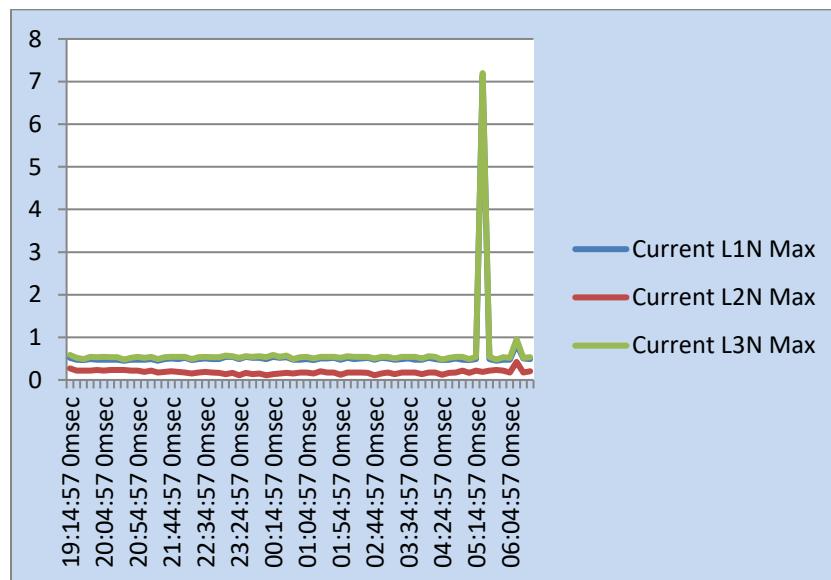
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Existing situation

Current - Daytime Amps between 50 and 70 amps



Current – Night time Amps- under 1 Amp

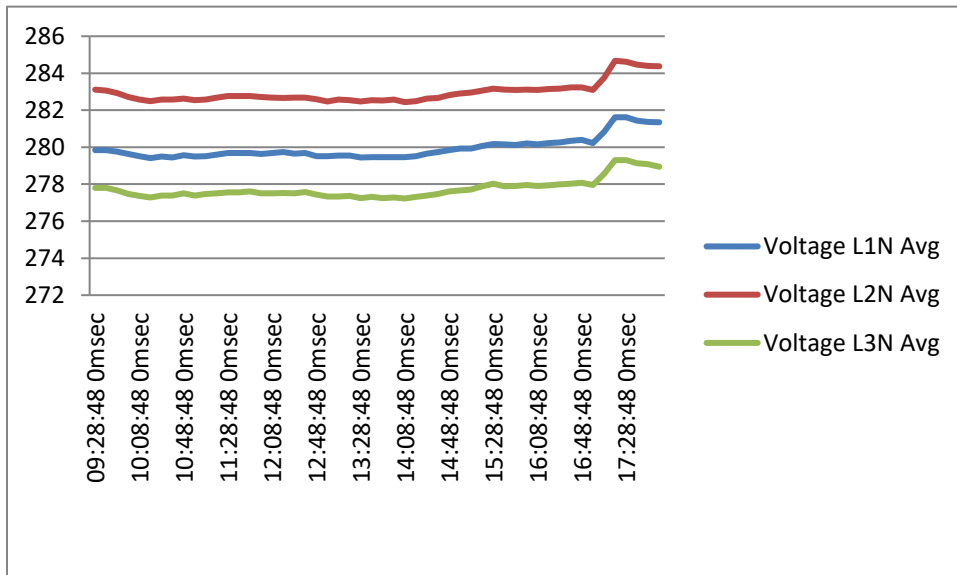


ENERGY EFFICIENCY AND SUSTAINABILITY

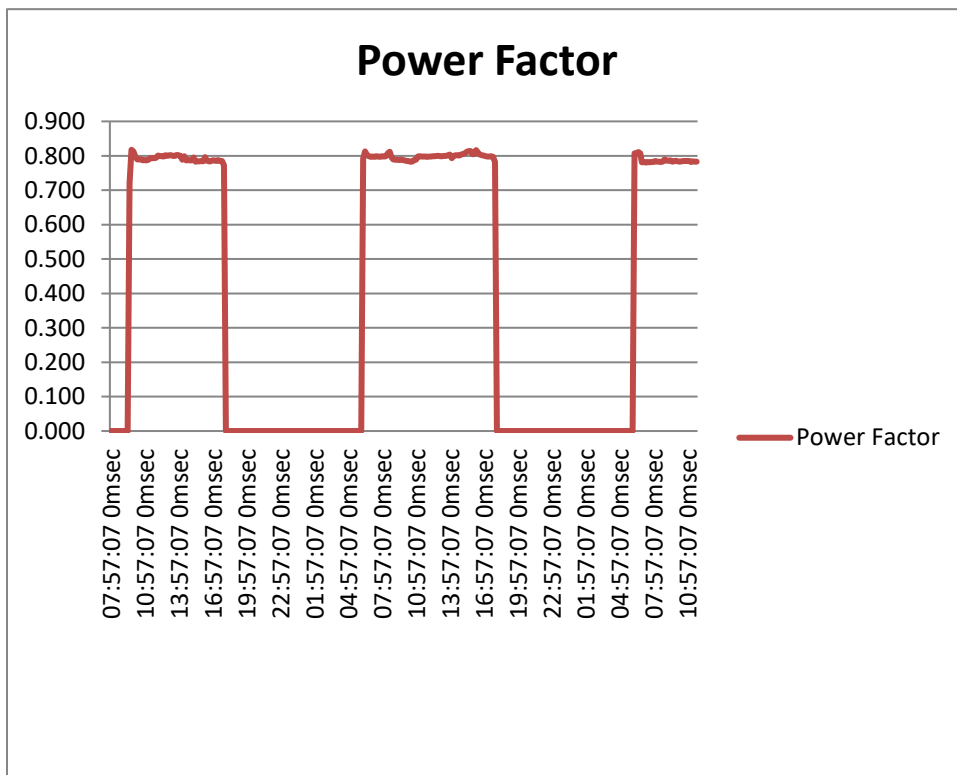
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Existing situation

Voltage – Average Voltages – during Data Logging period



Average Power Factors – during Logging period



ENERGY EFFICIENCY AND SUSTAINABILITY

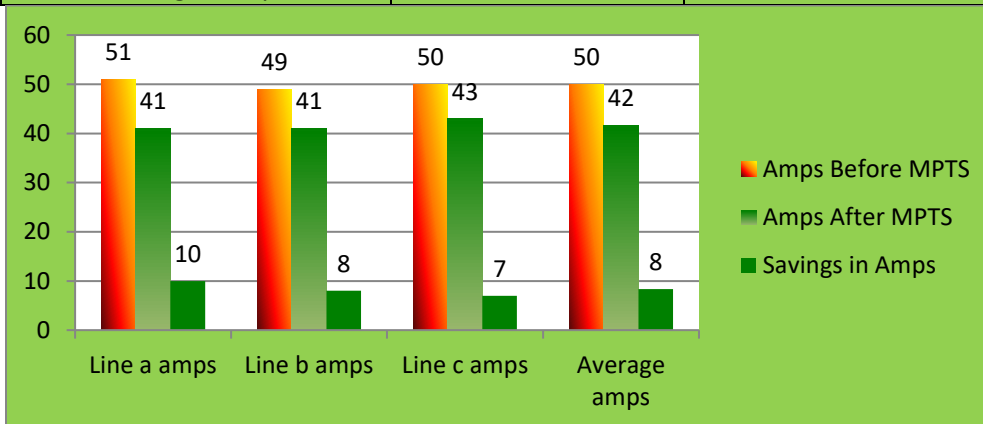
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Comparison of Data

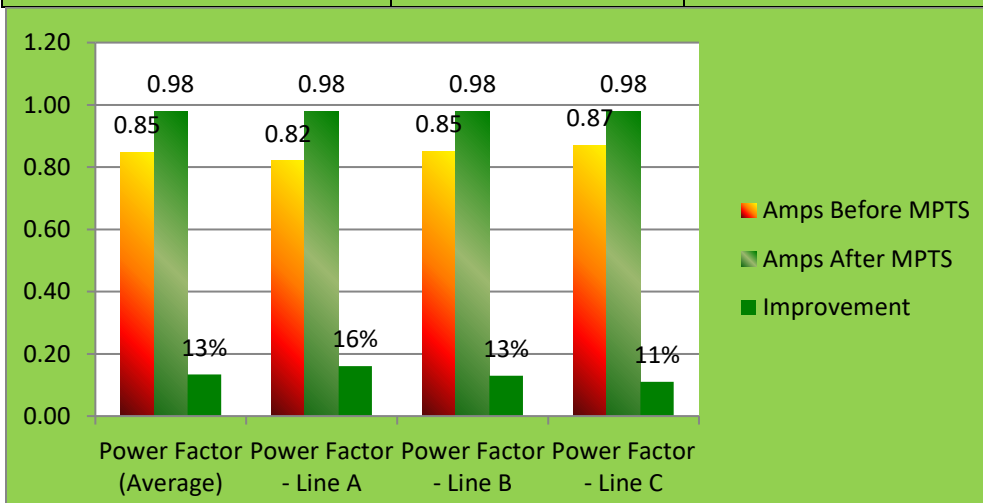
With and without the MPTS Energy Efficiency Solutions

— Before installation of MPTS and After installation of the MPTS Energy Efficiency Unit

Savings in Amps	Amps Before MPTS	Amps After MPTS	Savings in Amps
Line a Amps	51	41	10
Line b Amps	49	41	8
Line c Amps	50	43	7
Average Amps	50	42	8



Improvement in Efficiency	Amps Before MPTS	Amps After MPTS	Improvement
Power Factor (Average)	0.85	0.98	13%
Power Factor - Line A	0.82	0.98	16%
Power Factor - Line B	0.85	0.98	13%
Power Factor - Line C	0.87	0.98	11%

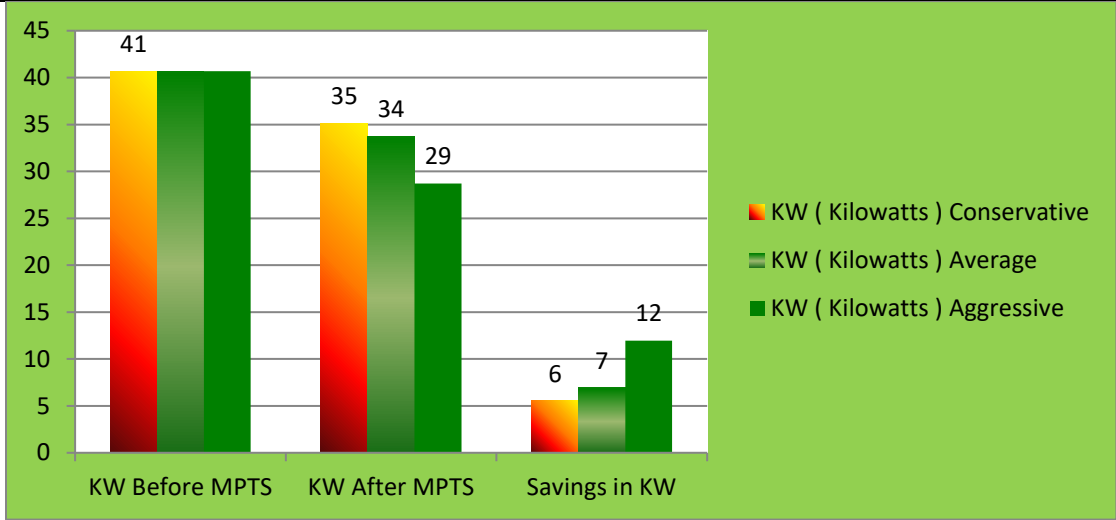


ENERGY EFFICIENCY AND SUSTAINABILITY

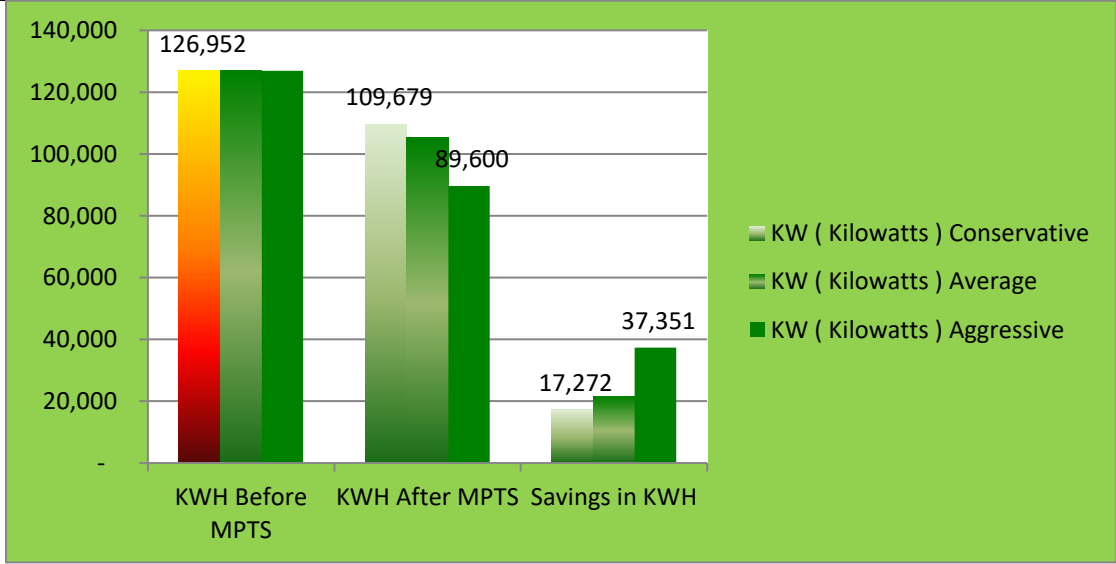
Evaluation of the MPTS Solution
US GSA

Comparison of Data
With and without the MPTS Energy Efficiency Solutions

Savings in KW	KW Before MPTS	KW After MPTS	Savings in KW
KW (Kilowatts) Conservative	41	35	6
KW (Kilowatts) Average	41	34	7
KW (Kilowatts) Aggressive	41	29	12



Savings in KWH	KWH Before MPTS	KWH After MPTS	Savings in KWH
KW (Kilowatts) Conservative	126,952	109,679	17,272
KW (Kilowatts) Average	126,952	105,361	21,590
KW (Kilowatts) Aggressive	126,952	89,600	37,351



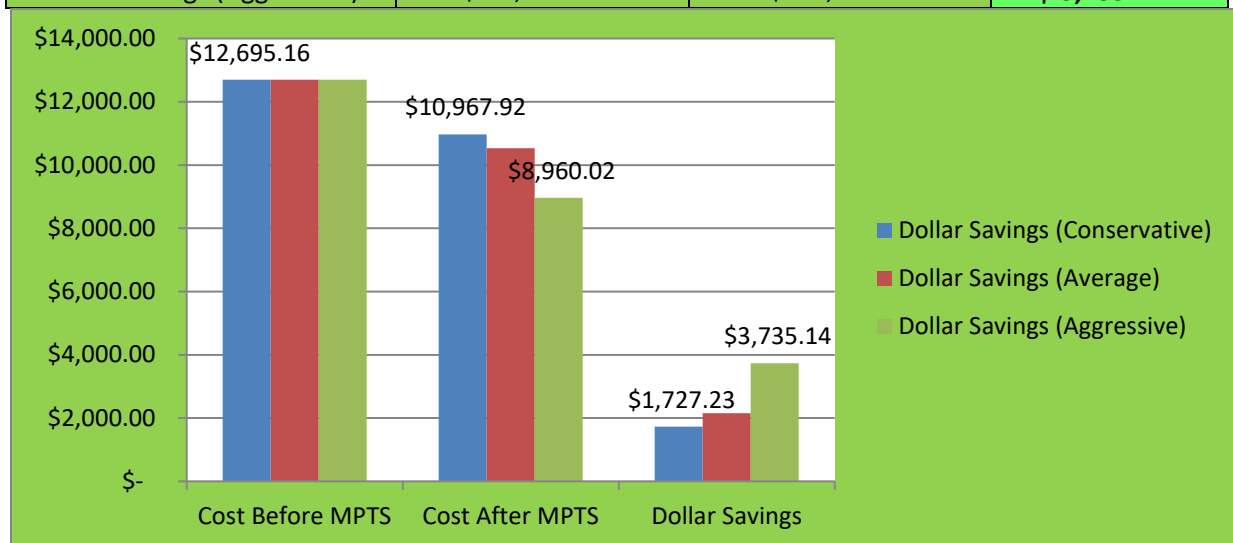
ENERGY EFFICIENCY AND SUSTAINABILITY

Evaluation of the MPTS Solution US GSA

Comparison of Data

With and without the MPTS Energy Efficiency solutions

Estimated Savings in dollars	Cost Before MPTS	Cost After MPTS	Dollar Savings
Dollar Savings (Conservative)	\$ 12,695.16	\$ 10,967.92	\$ 1,727.23
Dollar Savings (Average)	\$ 12,695.16	\$ 10,536.12	\$ 2,159.04
Dollar Savings (Aggressive)	\$ 12,695.16	\$ 8,960.02	\$ 3,735.14



Notes:

The above demonstration of energy efficiency is on a 50 amp, 480 volts chilled water pump-set motor working for 10 to 12 hours per day. When the weather is warmer, the pump-set motor will run more than 12 hours resulting in savings indicated above as aggressive savings.

In the demonstration carried out above, the MPTS unit is running with 50 percent utilization. when the utilization of the MPTS unit is greater than 70 percent then the savings will be more.

The nominal energy savings per MPTS 100 will be 10 KW with annual savings of 30,000 KWHs. When installed on air-conditioning units or 24 hour applications the savings will be double.

The nominal energy savings per MPTS 225 will be 20 KW with annual savings of 60,000 KWHs. When installed on air-conditioning units or 24 hour applications the savings will be double.

For maximum energy efficiency MPTS units should be installed on:

- Primary side of the Transformers
- Electrical Panels with mixed loads
- Sub panels feeding specific High energy consuming loads such as RTUs, HVAC chilled water pumps and compressor motors

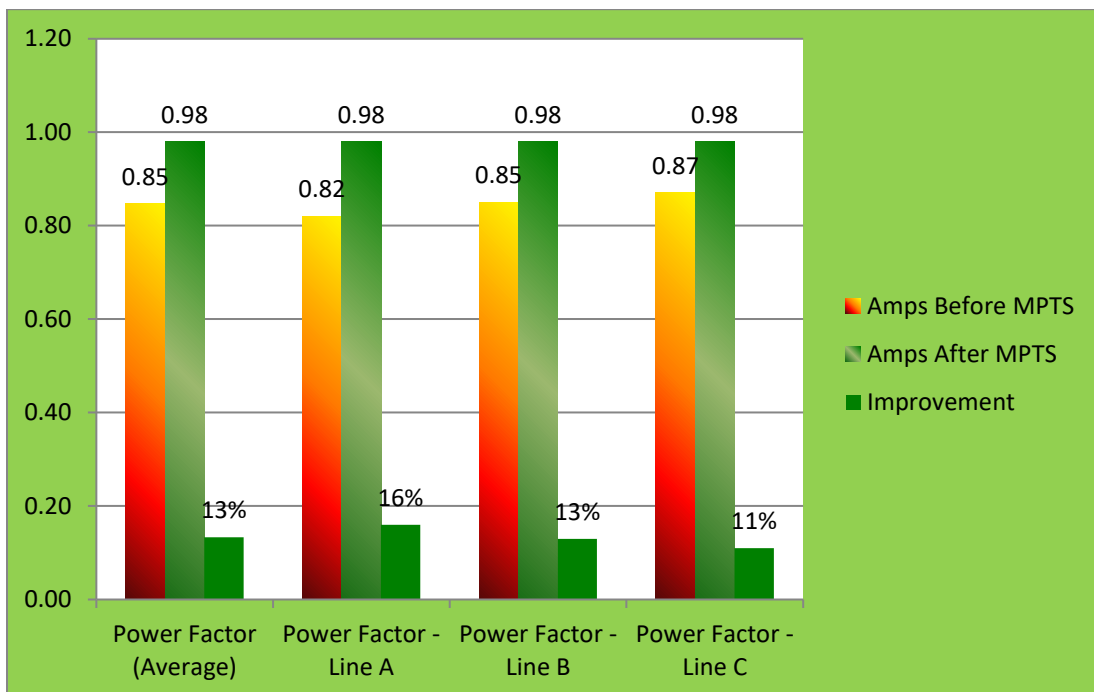
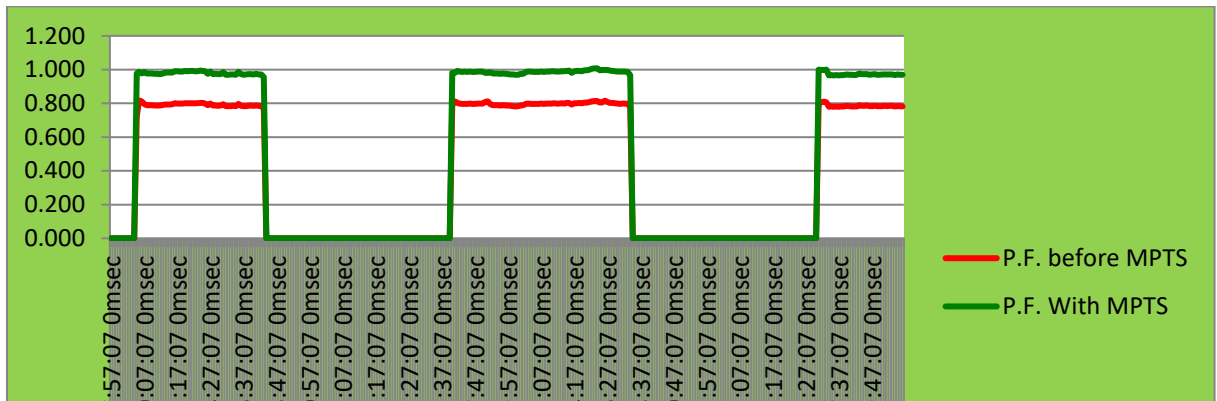
Energy Efficiency and Sustainability

Evaluation of the MPTS Solution US GSA

Comparison of Data

With and without the MPTS Energy Efficiency solutions

Energy Efficiency Improvement



ENERGY EFFICIENCY AND SUSTAINABILITY