

Power Factor Improvement Verification Through On/Off Testing

Manufacturing industry is one of the major energy-consuming industries and uses high-energy consuming machinery. High tech machines, such as electronic control cards and driver-controlled motors, can experience power cuts, which can damage the system and cause production failures. Research has shown that losses due to poor power quality can be as high as %15 of the industry's annual power losses. How can these losses be minimized? Our tailor-made solutions can improve power quality and energy efficiency, granting a wide range of applications.

Using the power quality report to assess the allowable harmonic distortions for the customer, it was established that a power conditioning system would be necessary. The detuning factor designed and calculated for the system was optimized based on the major harmonics numbers observed in the facility.

Performance M&V (Measurement & Verification)

Below is the summary of M&V audit done in the customer's facility:

	Voltage		Current		KVA (TOT)		KVAR (TOT)		PF (TOT)	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
PC ON	606.47	618.43	116.04	266.77	124.26	279.91	23.48	151.82	0.84	1.00
PC OFF	603.10	613.83	162.45	324.36	172.04	339.62	109.73	235.03	0.72	0.80
DIFF.	3.37	4.60	-46.41	-57.59	-47.78	-59.71	-86.26	-83.21	0.13	0.20
Improves	3.98		-52.00		-61.09		-108.52		0.19	
%	0.65%		-21.36%		-22.05%		-60.27%		24.95%	
Ave. OFF	608.47		243.41		277.01		180.05		0.76	

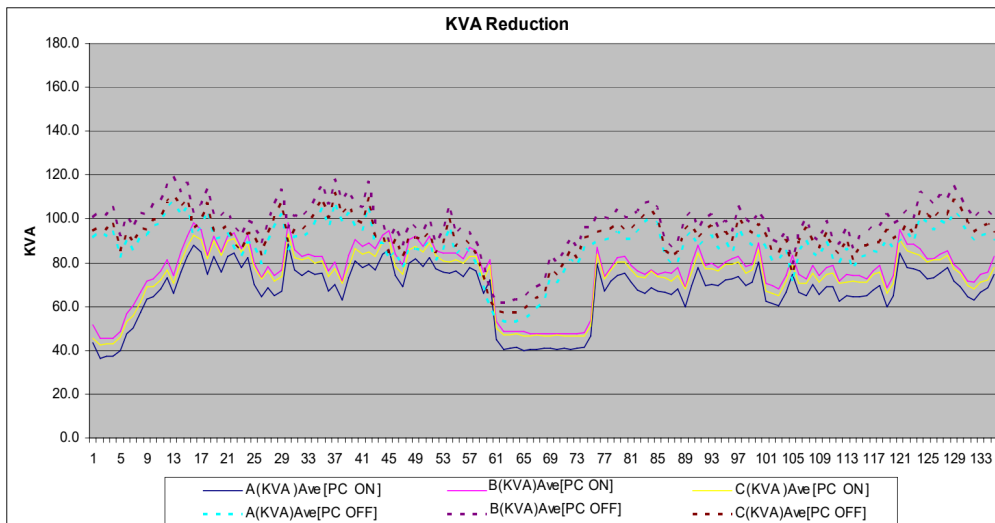
The data summarized in above table is based on -1minute interval averages from the -15minute ON and OFF samples. Our installation resulted in an improvement of %0.65 in voltage and %24.95 in power factor, which increased the average power factor to around %99, compared to the previous %80. A %21.36 reduction in total load current and a %60.27 reduction in reactive power at the transformer were also observed. Additionally, the KVA demands at the facility were reduced by %22.05.



KVA Reduction Trend During ON and OFF Testing

By comparing numbers observed for apparent power amplitudes during on and off testing, as seen in the graph below, it can be understood that the installed device, has reduced the average apparent power by %22.05 at the main transformer. On top of significant savings on the bills, it provides more flexibility to the managers so that more new loads can be added without requirements for service upgrade or infrastructure modifications.

Full lines represent apparent power in different phases while the system is turned on, and the dashed ones are those when the system was off. In other words, the graph is representing some kind of before & after comparison.



To find out more about the benefits of the system for your facility, keep in touch with us, we would be more than happy to have a chat with you.

