Cos Phi expertise helps printing company improve electrical systems efficiency and achieve utility savings to pay for it.

Location:
S.W. Ontario

Segment:
Printing Industry

Challenge:
Enhance electrical use to help eliminate power factor penalties and generate utility savings.

Solution:
Expert electrical system analysis leading to the application of a customized power factor correction system.

Results:
Increase electrical system efficiency and annual utility penalties reduce by more than $12,500.00, enabling full return on investment in 14.2 months

Background

Poor power usage results in low power factor. Certain industries such as the printing industry are known to have poor power factor utilization and low power factor.

Power factor is the ratio of working power (kW) to apparent power (kVA). It measures how effectively electrical power is being used. A high power factor signals efficient use, while a low power factor indicates poor use. Utilities constantly track this metric and often penalize companies with low power factor as an incentive to implement solutions that lead to more effective energy use - which results in lessened demand on the utility.

In this case, the local utility charged a penalty to a commercial printer when power factor dropped below 0.9. As a result, the customer was subjected to a monthly penalty due to poor power factor.

Challenge

Operational load at the commercial printing facility varied significantly throughout the day leading to vast fluctuation in the demand placed on the electrical equipment.

The change in loading caused the power factor levels to drop as low as 0.66 which was well below the 0.9 utility threshold at which point the utility penalizes its demand customers for poor power factor.

The resulting poor power usage led to the plant suffering demand penalties excess of $12,500.00 due to poor power factor. The penalties represented 20% of the cost of their demand charges.

Management contacted experts in the field to help them improve their power utilization and eliminate the penalties.

Case Study - Commercial Printing

Solution

To assist in developing a solution, the facility sought out the expertise of Cos Phi, a power factor and power quality correction company based in Hensall Ontario. They were able to facilitate in the development of an effective customized solution.

The team reviewed the facility's loads, historical data, and monthly utility bills. After the review the team developed a power factor correction capacitor bank solution that would raise the power factor to acceptable utility levels. Additional calculations were performed to specifically avoid harmonic resonance which could interfere with the reliable operation of the facilities equipment.

This led to Cos Phi recommending a custom de-tuned (harmonically filtered), automatically switched, low voltage power factor correction bank. The capacitor bank was installed at the main electrical panel.

The automatic PFC capacitor bank system was designed so that it will automatically switch capacitors in and out of the electrical system in order to maintain a pre-determined level of power factor correction. Additionally this PFC bank has an intelligent controller which monitors system kVAR, Voltage, Amps and harmonics.

Results

After applying the Cos Phi solution, which was also manufactured by Cos Phi, the plant increased its average power factor level to a point avoiding utility penalties. The new system increase the average power factor from .7 to .91+ which exceeds the utility .9 threshold for penalties.

Since the PFC bank has been installed the facility has recorded savings of slightly over $1,000.00 per month on demand charges alone. The estimated return on investment is 14.2 months.

An additional benefit to the installation of the power factor correction bank is that it will free up approximately 25-30% of the current kVA load on the transformer thus allowing for additional equipment to be added without upgrading the system. This reduced load will also increase the life expectancy of the transformer.

To learn more, visit

www.cosphi.com

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