Product & Savings Examples

AUTOVAR 300

- Automatically switched power factor correction systems for low voltage applications.
- Wall-mount design is ideal for minimum space requirements.
- Programmable to automatically add/subtract capacitor banks to maintain preset target power factor.
- Heavy-duty, three-phase capacitor construction.
- **Five-year warranty of cells.**

AUTOVAR 600

- Service entrance power factor correction installations requiring precise maintenance of target power factor.
- Programmable to automatically add/subtract capacitor banks to maintain preset target power factor.
- Heavy-duty, three-phase capacitor construction.
- **Five-year warranty of cells.**

kW Demand Billing with Power Factor Adjustment

The utility charges according to the kW demand & adds a surcharge or adjustment for power factor. The adjustment may be a multiplier applied to kW demand. The following formula shows a billing based on 90% power factor:

Assume a 400 kW load, 87% power factor with the following Utility tariff.

A. **Demand Charges**:

First 40 kW @ $10.00/kW monthly billing demand
Next 160 kW @ $ 9.50/kW
Next 800 kW @ $ 9.00/kW
All over 1000 kW @ $ 8.50/kW

B. **Power Factor Clause**:

Rates based on power factor of 90% or higher. When power factor is less than 85%, the demand will be increased 1% for each 1% that the power factor is below 90%. If the power factor is higher than 95%, the demand will be decreased 1% for each 1% that the power factor is above 90%.

Note: There would be no penalty for 87% power factor. However, a bonus could be credited if the power factor were raised to 96%.

To raise an 87% power factor to 96%, refer to **Table 5**. Find 0.275 x 400kW+110 kvar (Selec 120 kvar to ensure the maintenance of the 96% level).

To Calculate Savings:

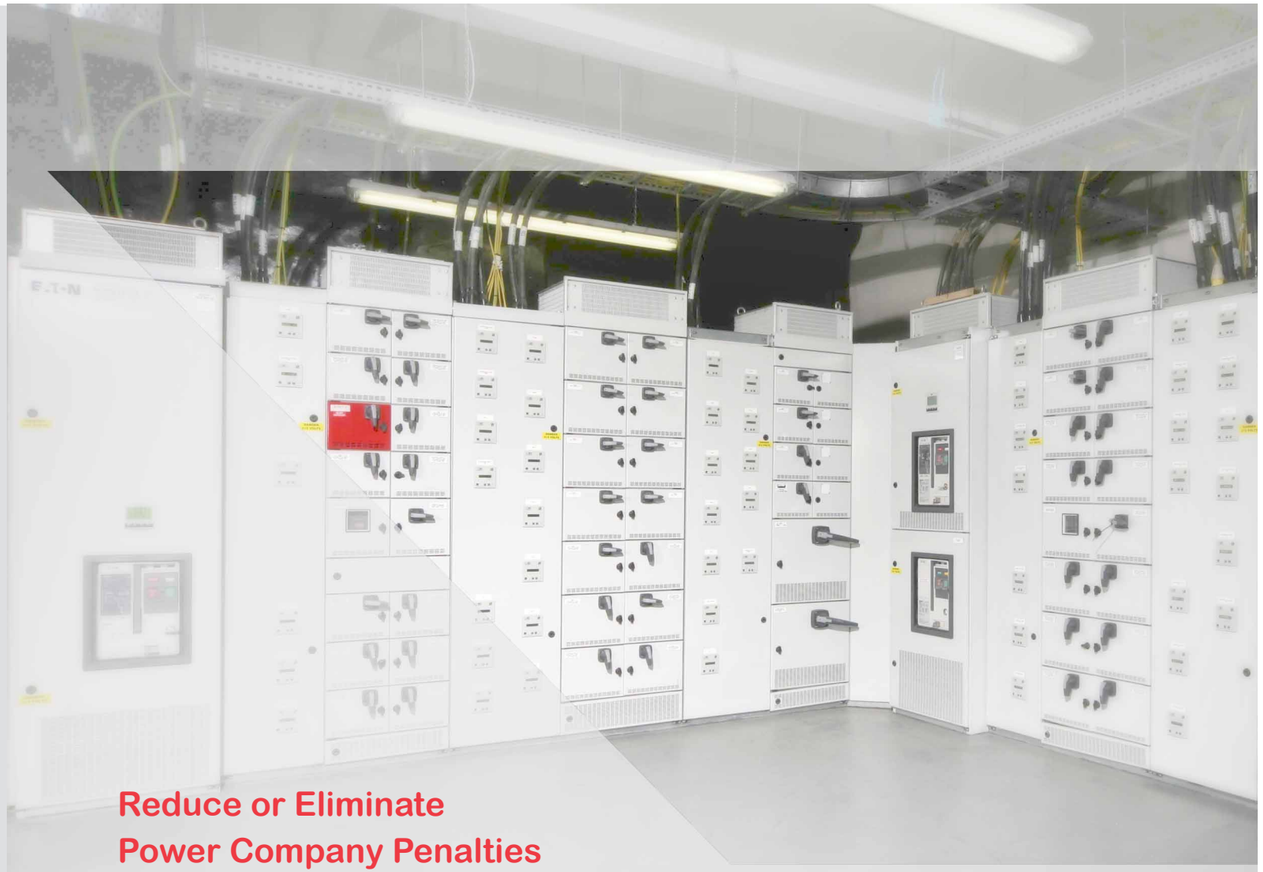
Normal 400 kW billing demand
First 40 kW @ $10.00 = $ 400.00
Next 160 kW @ $ 9.50 = $1520.00
Bal. 200 kW @ $ 9.00 = $1800.00
Total 400 kW $3720.00 Normal Monthly Billing

New Billing:

$$\frac{\text{kW x 0.90}}{\text{New Power Factor}} = \frac{400 \times 0.90}{0.96} = 375 \text{ kW Demand}$$

First 40 kW @ $10.00 = $ 400.00
Next 160 kW @ $ 9.50 = $1520.00
Bal. 175 kW @ $ 9.00 = $1575.00
$3495.00 Power Factor Adjusted Billing

Power Factor Correction



Reduce or Eliminate Power Company Penalties

While Increasing Load Capacity & Improving Power Quality

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Quality service where & when you need it!

Power factor equipment that reduces or eliminates power company penalties while increasing load capacity and improving power quality.

Power Factor Correction Pay$ Off

Power factor correction capacitors are the simplest and most economical means of increasing the capacity of any power system, minimizing energy losses and correcting load power factor. In addition, power factor penalties can be reduced and power quality can be greatly enhanced.

There are several reasons to correct poor power factor. The first is to reduce or eliminate a power factor penalty charged by the utility.

Another reason is that your existing transformer is, or shortly will be, at full capacity and installing power factor correction capacitors can be a very cost-effective solution when installing a brand new service. Depending on the amount of power factor correction and the dynamic nature of the load, a fixed or switched capacitor bank may be the best solution. When capacity becomes a problem, the choice of a solution will be dependent upon the size of the increase needed.

Like all power quality solutions, there are many factors that need to be considered when determining which solution will be best to solve your power factor problem.

Understanding Power Factor

Power is used most efficiently when the current is aligned with the voltage. However, most equipment tend to draw current with a delay, misaligning it with the voltage. What this means is more current is being drawn to deliver the necessary amount of power to run the equipment. And the more the equipment draws current with a delay, the less efficient the equipment is. Power factor is a way of measuring how efficiently electrical power is being used within a facility's electrical system, by taking a look at the relationship of the components of electric power.

Reduced Utility Bills

Your electric utility provides working (kW) and reactive power (kvar) to your plant in the form of apparent power (kVA). While reactive power (kvar) doesn't register on kW demand or kW hour meters, the utility's transmission and distribution system must be large enough to provide the total power. Utilities have various ways of passing along the expense of larger generators, transformers, cables, switches, etc., to you.

Harmonic Filtering

As the world becomes more dependent on electric and electronic equipment, the likelihood that the negative impact of harmonic distortion increases dramatically. The efficiency and productivity gains from these increasingly sophisticated pieces of equipment have a negative side effect…increased harmonic distortion in the power lines. The difficult thing about harmonic distortion is determining the cause. Once this has been determined, the solution can be easy. Passive and active harmonic filtering equipment will mitigate specific harmonic issues, and correct poor power factor as well. Power factor correction and harmonic filtering are available in one unit.

Quality service & solutions from trained & trusted professionals.

Control Harmonics
Increase System Capacity
Improve Voltage Conditions
Rapid Payback on Utility Bills
Establish a more "Green" Facility

Power Protection Products, Inc.

Power Factor Correction Capacitors & Harmonic Filters are an essential part of modern electric power systems.

We offer FREE evaluation of your facility to show how your facility could benefit from power factor correction & harmonic filtering.