



POWER FACTOR CORRECTION

For Small and Medium Enterprises (SME's)

Climate Change

Climate change caused by greenhouse gases is one of the most serious challenges facing our community. Human actions—particularly burning fossil fuels (coal, oil and natural gas) and land clearing—are generating more greenhouse gases. These additional greenhouse gases trap more heat and raise the earth's surface temperature. This is called the enhanced greenhouse effect—it causes global warming and is changing our climate. The impacts of climate change will have social, environmental and economic consequences that will affect all communities across the globe.

Why Small and Medium Enterprises

Greenhouse gas abatement is not just for the big end of town. Climate change will affect all of us and therefore it is to everyone's benefit to reduce greenhouse gas emissions. Most measures to reduce energy consumption and greenhouse gas emissions will save you money in the long term, increasing profitability. Some measures will even help to improve productivity and the marketability of your business. Reducing greenhouse gas emissions should be seen as an opportunity to provide your business with a strong business advantage.

Power Factor Correction

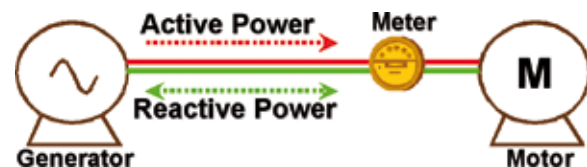
If your electricity bill contains a power factor penalty or if you are charged for peak load measured in kVA, power factor correction can help you reduce such surcharges. Look at your electricity bill to determine if such charges are relevant to your business.

If you are paying power factor charges, it will probably be worthwhile investing in power factor correction equipment. Often your investment in such equipment can be recovered in a 2-3 years and from then on will provide ongoing savings to you business.

What is Power Factor?

The electrical power used by motors and fluorescent tubes, has two components; active power and reactive power. The active power is converted into useful work – turning motors or producing light- but the reactive component is only used to “energize” the magnetic or electrostatic properties of the equipment. Reactive power still has to be produced by the generator and transmitted to your business over the electricity network. Producing and transmitting the reactive power creates costs for the electricity companies which are passed on to you as power factor penalties or surcharges.

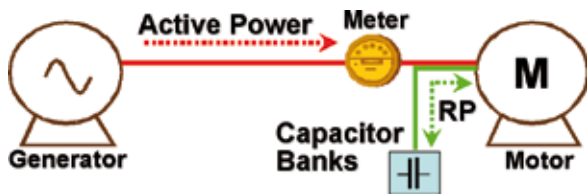
Power Flow Without Power Factor Correction



The Power Factor is, roughly speaking, a measure of what proportion of the total power supplied to your business is actually used by the equipment. The power factor value can vary between just above 0 and 1. The aim is keep the power factor as close as possible to 1, as power factor penalties generally cut in if it drops below 0.85.

How to Improve Your Power Factor

In the majority of cases the poor power factor is the result of electromagnetic loads, generally from the use of electric motors such as those used in air conditioners, escalators, elevators, pumps, chillers, ventilation systems etc. Low power factor can also be caused by fluorescent lighting ballasts. The power factor of a facility can be improved by “trapping” the reactive power by installing “banks” of capacitors. The capacitors store the reactive power and supply it to equipment when it is needed.

Power Flow With Power Factor Correction

To effectively reduce your power factor, you will need to obtain a technical assessment and design parameters for the power factor correcting capacitors to ensure they match the requirements of your equipment. Your energy supplier may be able to assist you in supplying this technical assistance, but there are also technical consultants available who will have the expertise.

Why not consider having a complete energy audit done for your business, which also addresses your power correction requirements? Generally the cost savings from energy efficiency actions identified in the audit will more than pay for the cost of the audit.

Power Factor Fundamentals

- If you use equipment containing electric motors, or florescent lights extensively, you may have a problem with your power factor.
- Check your bill for power factor penalties or peak load measured in kVA.
- A poor power factor will result in additional electricity costs to your business.
- Obtain expert technical advice to determine how your power factor can be corrected and install correction equipment if required.
- Consider also conducting a full energy audit, as these generally identify cost effective energy savings opportunities.