



## GENERAL SECTION

# Focus on Profits – Power Factor Correction

## INTRODUCTION

In this age of deregulation, many utility companies have little or no incentive for you as a manufacturer to improve your **Power Factor**. Improving your **Power Factor** will **save you money**. **Power Factor** measures the amount of wasted electricity at your manufacturing plant. The lower your **Power Factor**, the more waste and cost you have.

## WHAT IS POWER FACTOR?

In technical terms, **Power Factor** is the ratio of real power to total power. It is equivalent to the cosine of the phase shift angle between current and voltage ( $\cos F$ ). The phase shift is caused by magnetic fields generated in inductive loads (motors, lights, ballasts, transformers, etc.) It is called a **Reactive Load**. **Power Factor** can be determined by dividing the real power (KW) by apparent or total power (KV<sub>a</sub>). Many times, this information can be gathered from your electric bill; other times special instrumentation is needed to determine **Power Factor**.

## WHY IS POWER FACTOR IMPORTANT?

KV<sub>a</sub> is total power available to you and what you pay for. The lower the **Power Factor**, the more KV<sub>a</sub> is needed. Low **Power Factors** tend to make system voltage unstable, increase heat in electrical apparatus and can cause failure of electrical equipment. Many utility companies bill you for your poor **Power Factor**, increasing your cost of electricity. Utility companies have multiple rate schedules, and depending upon your rate schedule, **Power Factor** penalties may be a separate line item as a demand charge or may be considered as part your general electrical usage. To reduce your electrical cost, you can and should negotiate with your utility company to obtain the best rate schedule for your facility with an improved **Power Factor**.

## WHAT IS AN IDEAL POWER FACTOR?

In an ideal world, a **Power Factor** should be unity (1.0); typically the **Power Factor** should be between 0.90 and 0.95. If the **Power Factor** is below 0.90, it is economical to install capacitors to correct the **Power Factor**. If the **Power Factor** is greater than 0.95, it is not economical to try to approach unity.

## WHAT CAN YOU DO?

Evaluate your **Power Factor** by looking at your electric bill. If it is low or not determinable, contact your utility provider for assistance. If the utility provider offers little or no assistance, contact your local industrial electrical contractor for guidance and/or assistance. There is a high return on investment for capacitors used to correct **Power Factor**. They will often pay for themselves in eighteen months or less depending on how low your **Power Factor** is.

## SUMMARY

Correcting **Power Factor** increases profits and helps the environment by reducing fossil fuel use. The Payne Firm can assist you in evaluating your **Power Factor** and referring you to industrial electrical contractors. For more information, please contact Tony Domanico or Emily Rynders at (513) 489-2255 or by e-mail at [aid@paynefirm.com](mailto:aid@paynefirm.com) or [ear@paynefirm.com](mailto:ear@paynefirm.com). You may visit us at our web site at [www.paynefirm.com](http://www.paynefirm.com).