

POWER FACTOR CORRECTION

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What solutions are readily available for industrial electricians to improve energy saving and reduce electricity costs in the industrial, commercial and general business sectors? Installation of power factor equipment (PFC) is one answer. Unfortunately PFC technology is poorly understood by many people in the industry.

DEFINING POWER FACTOR CORRECTION

PFC is the ratio of the active (in other words, useable) power in kilowatts (kW) to the total (active and reactive) power in kilovolt amperes (kVA), calculated as: $kW / kVA = PF$

A PF of less than 1 (or 100 %) indicates the high level of reactive (magnetising) power load which causes some additional energy loss and, as a consequence, customers are charged for the extra power.

A poor power factor level requires more current to perform the same amount of work. By optimising and improving the PF, the load on the electricity distribution system is reduced. The savings through installing power factor correction equipment depends upon the initial PF, the level you correct to and electrical equipment loading. The PFC equipment works as a silent reactive power "generator" so that the total amount of electricity demand decreases.



Power Factor Correction equipment is an elegant solution for increasing efficiency and delivery immediate electricity savings.

TECHNICAL BACKUP

With the aid of Capacitor Technologies you can access modern power factor designs and a full portfolio of technical solutions and services to make your business more energy efficient, productive and competitive. Founded in 1990, Capacitor Technologies (CapTech) is an electrical power support company, specialising in the design, manufacture, installation and commissioning of power factor improvement systems in a niche market. CapTech provides a hands-on turnkey solution tailored to each client's needs. Technical experience is supported by German based Frako.

As a division of CBD Energy Ltd, CapTech has the backing of a public company which is a serious player in the renewable energy field. In addition to its sales of many thousands of PFC systems in Australia, it has supplied power factor devices to The Republic of Yemen, Fiji, Hong Kong and Papua New Guinea. The company develops and supplies low and high voltage PFC equipment to the

industrial, commercial and general business sectors with its systems provided to the mining, manufacturing, support and retail industries.

IN PLANT CASE STUDIES

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CapTech recently commissioned 2 units of 5,000 kVAr 11 kV Automatically Switched Capacitor Banks for a large cement plant in Australia on behalf of the Supply Authority. The primary aim was to reduce the electricity costs. CapTech designed, built and installed the system including associated protection.

Design criteria included enclosures being able to withstand extreme environment conditions and providing high reliability. The customer benefited from reduced costs of their electricity billing with less than a 2 year payback.

EXTENDED WORKING LIFE OF MACHINERY

According to CapTech CEO Yury Brodsky, the CapTech systems are useful wherever there is diverse or large machinery or where there is a high demand for electricity such as is necessary for lighting of large areas. An enormous advantage of the systems is that cost recovery is generally achieved within one to three years. Another advantage is the extended working life of machinery, with substantially reduced demand for replacement parts.

CapTech provides more comprehensive services extending beyond the power factor systems. These include tailor-made systems which incorporate all areas of harmonics, surge and lightning protection, and measuring and monitoring instrumentation and software.

IMMEDIATE COST SAVINGS

CapTech's PFC systems increase the efficiency of power supply, delivering immediate cost savings on electricity. Other advantages of PFC include:

- Reducing greenhouse gasses by minimising the amount of natural resources required
- Reducing harmful system harmonics and therefore fewer occurrences of power quality-related equipment problems
- Ability to free up spare capacity on the transformer and main switchboard, thereby providing additional capacity for future load growth without the need to upgrade infrastructure
- More stable and improved voltage regulation ensuring motors and plant operate at maximum efficiency
- Reducing strain on the network provider's supply systems thus helping avoid possible blackouts in the area.

PRODUCT RANGE

In addition to PFC equipment, Capacitor Technologies provides switchboards, filters, capacitors, magnet copper wires, insulation papers and varnish. The company does surge and lightning protection, energy monitoring and management systems and components. It also provides installation, service and maintenance of low and high voltage systems.

For further information visit our website www.captech.com.au 