Power Correction Systems: Maximizing Energy Efficiency for Utilities

Power Correction Systems (PCS) is a world leader in maximizing energy-efficiency arising from Power Quality, Process, Lighting, HVAC, and Building-Shell Energy Dynamics. PCS delivers comprehensive and short return-on-investment solutions to our customers. Our customers can expect us to place a high priority on customer service, equipment reliability, as well as personnel productivity.

PCS: Integrating Integrity with Innovation

We do the following for our customers:

- Keep our customers current with state-of-the-art energy efficiency solutions
- Integrate efficiency and control to optimally decrease energy bills
- Distribute effective and unique power conditioning products
- Provide sustainable energy solutions

Capturing Monetary Savings

Power Correction Systems (PCS) improves energy-efficiency with approaches seldom utilized by energy service companies. Energy-efficiency, equipment-reliability, and human-productivity are simultaneously balanced to optimize the costs versus benefits for our clients. Our methods often capture much greater monetary savings than those that are associated solely with energy waste.

The principal way PCS stands apart is attention to Power Quality of electricity and the products and services utilized to improve it. Often, poor power quality has reliability and productivity effects that greatly overshadow energy losses. However, it is common that power-quality associated energy losses alone exceed 10 percent of use – and this percentage is growing. Such problems are common with motors, variable-speed drives, welding, and arc furnaces. Moreover, equipment used in hospitals, telecommunications, process control, navigation, laboratories, computers, and lighting are especially vulnerable to and/or often are the cause of poor power quality as well. Productivity of personnel, reliability of equipment, and stability of system performance are all affected by power quality; the aggregate economic losses are often very large – enough to seriously affect profitability of any business. PCS is proud to offer new, innovative techniques and equipment that can correct system inefficiencies and instabilities caused by harmonic and power factor imbalances.

PCS also provides innovative expertise in the traditional side of the energy service business, always seeking to lower energy use via the orchestrated reduction of thermal, lighting, and other such energy systems. PCS is distinguished with approaches including: forecasting energy savings derived from cancelling harmonics and improving power-factor; controlling humidity versus temperature; radiant cooling; maximizing the trade-off between pursuing efficiency versus control; daylighting; storing heat for future seasons; ductless systems; and more.

These approaches allow PCS to occupy a unique market niche, which seeks to minimize this broader range of costs and thereby provide more benefits for our clients. Optimum savings are predicted via sophisticated analytical tools that consider electricity power quality, process, thermal, lighting, utility billing, and human-impacts issues.

PCS is ready to provide comprehensive energy-efficiency services and product solutions to our customers – particularly those with industrial, medical, governmental, commercial, institutional, or educational facilities.

The company's founder and president, Brahm Segal, has participated with the IEEE industrial applications society, power electronic society, and advanced high technology society. He continues to be actively involved in developing these products, which are highly valuable tools for of the worldwide energy industry.

The Problem of Harmonics

Since 1965, the introduction of low-cost, high-efficiency semiconductor devices has

TimesOne™
The Energy-Efficiency Company

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What Are the Major Causes of Harmonics?

Electronic Switching Power Converters

- Computers
- Uninterruptible power supplies
- Solid-state rectifiers
- Electronic process control equipment, PLCs, etc.
- Electronic lighting ballasts, including light dimmers
- Variable-speed voltage motor controllers

Arcing Devices

- Discharge lighting (e.g., fluorescent, sodium, and mercury vapor)
- Arc furnaces
- Welding equipment
- Electrical traction system

Ferromagnetic Devices

- Transformers operating near saturation level
- Magnetic ballasts (saturated iron core)
- Chokes in switching power supplies
- MRI systems and medical equipment

Appliances

- TVs, air conditioners, washing machines, microwave ovens, vacuum cleaners
- Fax machines, photocopiers, and printers

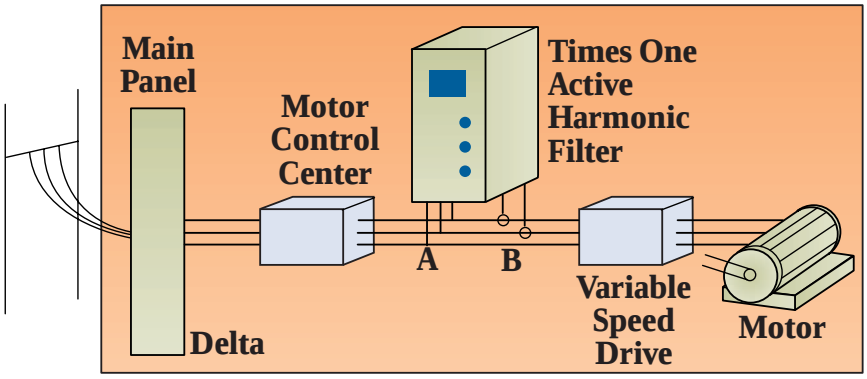

Figure 1 *Times One Active Harmonic Filter*

increased the use of electronic (static) power converters throughout industry in the form of variable-speed drives for all types of machinery.

After the 1973 oil embargo and the associated rapid increase in energy costs, it has been economical and esential to utilize electronic power coverters on larger systems, as well as to apply power improvement capacitators to minimize the increased cost of energy. These have also generated significant harmonics in power systems.

In 1980, harmonics were recognized as a major technical issue in the U.S. Since then, the National Electrical Code (NEC) has addressed the requirements for equipment and system performance under the influence of harmonics for applications in highly non-linear load installations. The NEC has been regularly updated since its inception. In fact, a major series of amendments were implemented in 1996.

Products and Services

PCS products include solutions to minimize harmonics problems and correct low power-factor environments. Our solutions utilize our high-capacity and high-voltage Active Harmonic Filters and Power Factor capacitor assemblies. These products can be incorporated to enhance co-generation, energy-storage systems, and uninterruptible power-supplies solutions. The PCS product line is unique in the marketplace for reliability and range of performance.

Our services complement the choice and installation of the above products and also provide the broad range of support services for Process, Lighting, HVAC, and Building-Shell Energy Dynamics.