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On September 4, 1882, Edison switched on his Pearl Street generating station's electrical power distribution system, which provided 110 volts direct current (DC) to 59 customers in lower Manhattan. In approximately 1877, George Westinghouse suggested using high-voltage AC instead, as it could carry electricity hundreds of miles with marginal loss of power. For many years there were low power costs, with most of the inadequacies of the distribution systems absorbed by the utility. Unlike the rest of the world, North America was the recipient of the lowest prices available. Those days are over due to environmental, regulations and movement to non-coal generation. Power Conservation and Management of Power Quality are now required by all users. Reduction of energy invoices will be the key as power charges escalate as seen.

In our practise of electrical power systems design for residential, commercial, institutional and industrial facilities "POWER QUALITY" is a major concern. With the growing number of regulatory agencies, smart grids, smart meters, electrical transient voltages from system equipment when coupled with punitive Utility charges for a multitude of items, quality needs to be addressed. Studies of devices to improve the power must be undertaken to eliminate conditions that affect the "POWER QUALITY ". Our preference was to employ these devices adjacent to the power consuming equipment to insure that the quality device (Circuit Master) was energized when required. Again location was a major factor with the devices ((Circuit Master) sharing equipment.

The main objectives for the selection of any additional system device were;

- Reduction of harmonic frequencies which may be harmful for the rotating device.
- Surge and Transient Voltage Suppression.
- Reduction of line losses.
- Extended longevity of the induction equipment.
- Power Correction of the existing branch circuits.
- A favourable Return On Investment (ROI)

We have completed several studies of devices and have found the Circuit Master to be the most complete device available to address the objectives noted above. We have been recommending, for the past three years, after engineering analysis and economic calculations for ROI, the installation of the Circuit Master selectively on those units which have long duty cycles. Long duty cycles may be in the following units;

- Exhaust Fans, Air Tempering Units.
- Air Compressors, Make Up Air Heating units.
- Process Pumps, Conveyor Drives.

Just to point out a few of the above more common induction motor applications with long duty cycles.

I am a licensed professional engineer in Canada (Ontario, Quebec, Saskatchewan) and the United States (Maryland, Massachusetts, Michigan). I have completed projects in Europe, Mexico, Puerto Rico, Canada and the United States. My practice began in 1966 and still continues to this day. Projects have included residential, multifamily dwellings, petro chemical, educational, health care, research, military, commercial, institutional, food /beverage and industrial. Assignments have also included design, construction and facilities engineering. I have extensively lectured on the Community College and University levels, and have published several articles on electrical design, and construction management for national publications.

Trebor hopes that this letter will assist in your Power Quality Management endeavours and reduce the amount of your electrical utility invoices over the next few decades of adjustment.

Regards



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