

Power Quality Analysis

- *Record and profile electrical service anomalies occurring within your facility*
- *Verify the quality of the power you are receiving from your utility company*
- *Helps to protect the critical power system in your facility as well as other equipment downstream*
- *Supports and protects your investment in any preventive maintenance program*



While electrical distribution design has not changed dramatically over the course of the last 40 years, the same cannot be said for the equipment and devices serviced by this distribution. Electrical distribution was designed for mostly resistive loads like incandescent light bulbs and very large motors with huge amounts of copper. These loads are not affected by electrical disturbances.

External power distribution problems, while among the most catastrophic, account for only 5% of today's power quality problems. This

means that 95% of power quality problems are caused by the loads attached.

The introduction of the microprocessor and variable frequency drive, with reactive components like capacitors and inductors, both cause and are more susceptible to power quality problems. Since 95% of all power quality problems are caused by the equipment within your facility, a typical transient voltage surge suppressor (TVSS) with a stack of metal oxide varistors (MOVs) at the entrance does not offer

Service Profile

protection within the facility from the equipment itself.

McPhee Electric offers the innovative Environmental Potentials line of power quality components forming a complete, tailored solution for your facility and business processes. Using advanced testing equipment, McPhee will monitor key electrical parameters (e.g. voltage, current, presence of high frequency noise and harmonics).

A complete report of our findings will be presented to you with our own stepped approach to solving any power quality issues found. Environment Potentials offers the only device that removes, absorbs and dissipates:

- Transient Voltage Surges & Spikes
- High Frequency Noise
- Ring Waves

Energy is not shunted to ground thus the unit doesn't require a ground connection – the energy is absorbed and dissipated completely within the device. Traditional power quality devices shunt energy to ground. With ground connections spread throughout buildings and equipment for safety, ground has become a conductor circulating these disturbances.

Contact McPhee Electric today to discuss just how a power quality audit can help you to improve the reliability and efficiency of your critical power system.

What problems are caused because of poor power quality?

- Random lockup of computer related equipment
- Premature failure of electronic components (e.g. hard drives, power supplies, boards)
- Premature failure of light bulbs/ballasts
- Hot transformers
- HVAC Control Failure
- Variable Frequency Drive (VFD) Failure
- Random fuse burnout
- Decreased motor efficiency

What methods are currently available for improving power quality?

- Transient Voltage Surge Suppression (TVSS) with Metal Oxide Varistor (MOV) and capacitance which shunt noise to ground (very good possibility of causing ground loops)
- Higher K-factor transformers
- Increased conductor sizing to reduce voltage drop
- Increased neutral sizing to compensate for 3rd, 5th and 7th harmonics
- Huge ground grids
- Exponential ground plains

None of these solutions eliminate the poor power quality issue – they merely mask it! We are still having problems worldwide with power quality, but the experts at McPhee can help you protect your critical power system.