

# Frequently Asked Questions About Power Disturbances

## What is a power disturbance?

A few examples of power disturbance issues are:

- random equipment failures
- flickering lights
- frozen computer monitors
- non-scheduled equipment restarts
- static shocks
- Major equipment outages or failures during or after lightning strikes and power surges.

## What causes electrical equipment to fail?

Electrical equipment outages and failures are caused by power disturbance issues such as improper: total loss of utility power, partial loss of utility power, building protection, equipment protection, power quality, bonding and grounding.

## What is the typical process to restore failed electrical equipment?

At many facilities when any electrical equipment fails, the process is to Restore, Repair or Replace the equipment. SPGS America calls this restoration process the RRR method.

## What should the process be to restore failed electrical equipment?

Prevent the power disturbance from causing the electrical to failure in the first place. SPGS has solutions for Preventing the Restoration, Repairing or Replacement of the electrical equipment failure in the first place. SPGS America calls this process the PRRR method.

## What percentage of the time does the utility deliver Power to the average customer?

In the United States, most utility power companies deliver power on an average of 99.35% - 99.5% percent of the time. During the course of an average year, the utility power will be off for 44-57 hours, at random times.

## What percentage of power disturbance problems do utility companies cause?

Many studies have indicated that the utilities are the cause of 20% of all power disturbance issues.

## What causes the other 80% of power disturbance problems?

The remaining 80% of the power disturbance problems occur within the facility's own electrical power infrastructure, not because of external causes. e.g., their utility power fails.

## **How much money is lost every year from power disturbances from the utility company and each facility?**

SPGS America does not have real cost data to actually show a dollar value however; every company's loss will depend on a number of factors: what type of outage, time of outage, equipment damages from the outage, percent of facility effected from the outage etc. Depending on the history of the facility, it would not be unusual for typical power disturbance costs to be 0.5%-5.0% of all labor cost, overhead cost, production cost or sales revenue per year. From case histories of SPGS's customers, the average power disturbance percentage cost seems to be 1.5%-3.5% of all labor cost, overhead cost, production cost or sales revenue per year.

## **What does a facility manager need to do to learn more about downtime and solutions to downtime?**

All of our offered services can be viewed our web site. Request our free "downtime calculator" that will assist in calculating the real dollar value cost from utility power failures and other facility equipment failures that power disturbances have on the productivity at each facility. This calculator could also be considered a "risk reward" calculator. Enjoy your visit, and by all means contact SPGS America at 855-887-8463 for solutions to your facility downtime issues.

## **What type of equipment is considered "Voltage Susceptible?"**

Computers, communication and switching equipment or any equipment incorporating semiconductors are extremely voltage-sensitive. Networked equipment, copiers, printers, as well as computer-controlled production equipment also are vulnerable to power problems.

## **If our facility meets the National Electric Code, is our equipment protected?**

Not necessarily-the National Electric Code specifications provide only the minimal acceptable safeguard for personnel and property. A look at the National Electric Code language helps to relate the intent compared to your needs:

"CODE 90-1 Purpose...Section "C

Adequacy. This Code contains provisions considered necessary for safety. Compliance therewith and proper maintenance will result in an installation essentially free from hazard, but not necessarily efficient, convenient, or adequate for good service or future expansion of electrical use

Intention. This Code is not intended as a design specification nor instruction manual for untrained persons.

## What are the symptoms of power quality problems?

The symptoms are varied, and what appears to be chronic hardware or software problems can be masked power/grounding problems. Common signs include:

- Increased service calls
- Poor equipment performance
- Partial equipment failure
- Equipment "ghost" problems
- Repetitive downtime
- Failures caused by building event
- Shortened equipment life
- Downtime and performance problems during/after bad weather and storms

## What is the solution to power quality problems?

The first step is to identify and quantify the problems through a system audit and evaluation. Because alterations to the Building Safety Protection System should address the specific problems documented during the evaluation process, the solution is as effective as the thoroughness of the system audit.

SPGS specified or reuses a "Five Point Approach" to solve power and grounding quality control issues, and to assure quality power in the future:

- Evaluate the building power and ground systems
- Report the findings with recommended corrective actions
- Make the alterations as requested
- Install passive monitors for continued quality control
- Maintain quality with a regular maintenance program

## What is a Building Protection and Grounding System?

There are several types of Building Protection and Grounding System designs, but the purpose is the same: the system bonds and grounds all metallic objects and sensitive devices within, near, or connected to the building to the Building Protection and Grounding System via safety conductors. It is an inherent system intended to protect personnel and equipment within, near, or connected to a building against:

- Lightning surges
- Power surges
- Power faults
- Transient voltage
- Ground faults

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