



**Chase Power review the
problems associated with power
and the ability to solve issues with
Uninterruptible Power Supplies!**



‘Beat the Blackout blues with battery back-up units’

Introduction

The functioning of our highly sensitive electronic equipment is dependent upon the supply of clean, consistent power. In this Age of Technology, our ever growing demand for power often exceeds supply.

Today computers are used to control the operation of many different types of facilities. Despite all the advances in technology, one thing that has not been improved sufficiently is the susceptibility of the computer to power problems.

Computers are among the most sensitive types of electronic equipment. Although there are many problems which can cause data loss, the largest cause of data loss is related to power quality. The function of the computer system will vary its susceptibility to power quality issues.

Power problems which will affect the performance and reliability of your computer system include:

- **Brownout** - also called a sag - is a “dip” in the voltage level from the electrical power supply. These are extremely common and occur without warning and often without the consumer knowing. Power Sags or Dips account for the majority of power quality problems.
- **Spike** - also called a surge - is a very rapid and temporary increase in the electrical power supply. These are a serious source of distortion and are a most destructive problem.
- **Blackout** - also called an outage or interruption - a total loss of supply for a period of time.
- **Electrical Line Noise** - a high frequency distortion of the voltage waveform

Other problems which will impact negatively on a systems operation include:

- **Transients** - a temporary excess of voltage, current or load in an electrical system which has been disturbed. Transients are short duration events.
- **Harmonics** - a recurring distortion of waveform of the supply voltage.
- **Notching** - a disturbance of opposite polarity.
- **Overvoltage** - occurs when the voltage is raised above design limits.
- **Short Circuits** - when two electrical wires (Positive and Negative) are incorrectly connected together.
- **Swell** - an increase in voltage.
- **Frequency Variation** - a change in frequency from the power source.
- **Power Factor** - measure of the effectiveness with which an electrical device converts volt-amperes to watts.

Power quality problems which affect computer systems can cost businesses from a couple of hundred to many thousand and even millions of dollars depending on the severity of the problem and the nature of the business.

With our power suppliers unable to guarantee the quality of supply, the consumer is forced to take responsibility for the health and safe operation of their equipment. Prevention is better than cure.

Causes of Data Loss

Most of us understand that electrical surges can damage a computer system, but many do not understand that most power related problems are not so obvious.

When accounting records display customer “A” as owing \$100 when it should be \$10,000, or when invoices from last month became corrupt or unreadable, it often put down to incorrect data entry or a computer “virus”. This is not always the case. In fact in 45.3% of cases the real cause of this data corruption is from power related problems.

Problems that are related to power include errors in data files, excessive wear and tear on hardware, keyboard lockups and worst of all, hours of work and data lost. It has been recorded that a typical computer is subject to more than 120 power problems per month.

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|-------------------------|--------------------------------|
| • Power Failure 45.3% | • Flood water Damage 6.7% |
| • Storm Damage 9.4% | • Hardware/Software Error 8.2% |
| • Fire & Explosion 8.2% | • Network outage 3.2% |
| • Earthquake 5.5% | • Other 13.5 % |

With such a high proportion of data loss being caused by power problems it is necessary for all business to consider looking at power protection systems.



Types of Power Problems

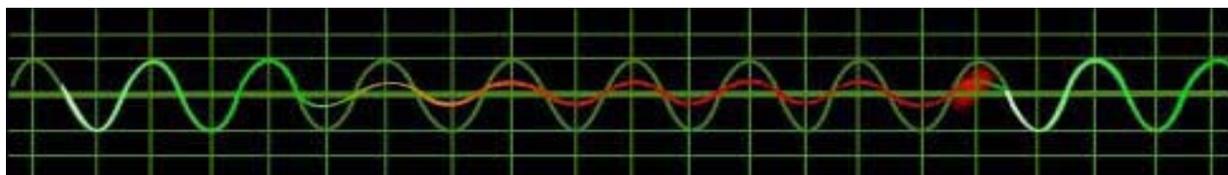
Most people believe that blackouts are the biggest problem associated with power. However, recent figures indicate otherwise.

- Brownouts 87.6%
- Spikes 7.0%
- Blackouts 4.8%
- Surges 0.6%

Businesses should be concerned about power problems as even the smallest disruption can cause damage to computers, networks, and other sensitive electrical items including cash registers, telephone systems, eftpos machines, computer peripheral equipment and process control equipment.

At the very least power problems can cause data loss and unexpected shutdowns. In severe cases, bad power can cause damage or destroy equipment. Bad power can be identified by many different indicators including a computer's monitor and indicator lights flickering or becoming wavy; unexplained errors in transmission of data; sudden loss of Internet connections; system lockups; aborted modem transfers; and hard drive crashes.

Brownouts: Short Term decreases in voltage levels.

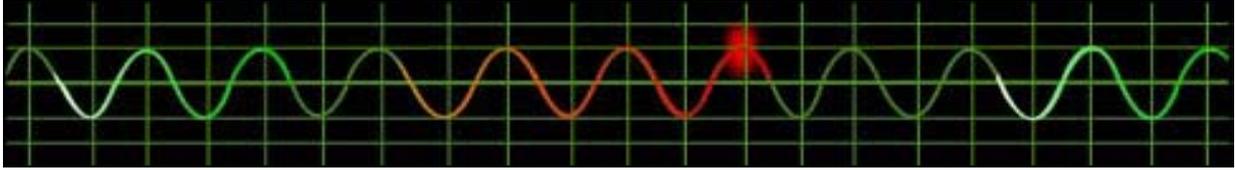


Causes: Start-up power demands of electrical devices e.g. motors, elevators; inadequate power supply; poor circuit design. Some utility power companies cope with extreme demands on the power grid by systematically lowering voltage levels in certain areas for hours or days at a time. This procedure is known as a rolling brownout.

Effects: Computers become starved of the power required to operate, resulting in frozen keyboards, unexpected system crashes, reduced efficiency, reliability and life span in electrical equipment, active data loss and/or data corruption.

Brownouts are often followed by spikes which are also damaging to computer components and data.

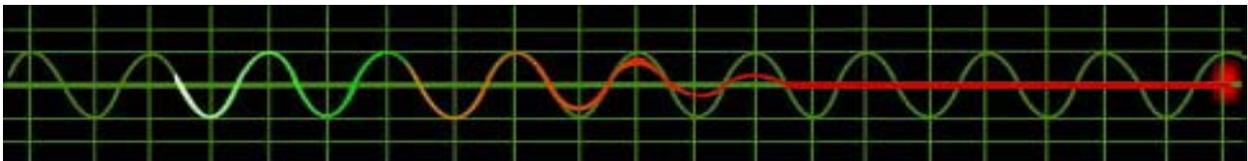
Spikes: An instantaneous dramatic increase of voltage



Effects: Computer lock up and data loss

Spikes are like an electrical tidal wave to any electronic equipment.

Blackouts: A total loss of Power



Causes: Excessive Demands

Effects: Loss of works and stored material

Major Concerns: Effects on hard drive

Reality: All computers should be protected from power fluctuations and outages.



Conclusion

Our demands for clean, consistent power continue to rise and our utilities are already struggling to meet demand. This is unlikely to change as it takes approximately ten years to bring a new power plant on-line. Concerns as to the most efficient method to produce power (coal, gas, wind, solar, co-generation etc) have also slowed construction of many new power projects.

With our power suppliers unable to guarantee the quality of supply it is up to us to put measures in place to protect the health and safe operation of our vulnerable equipment. Most of us are familiar with the benefits of installing surge arrest boards, but these are only capable of providing part of the solution. We suggest you consider the advantages of installing a UPS.

What is a UPS?

A UPS is an Uninterruptible Power Supply. Chase Power UPS's protect against loss of the electricity supply by providing battery back-up for a period of time. The Chase Power UPS can be utilised to provide short-term power during an outage, or until a standby generator is started for longer term power back up as is more likely the case in larger industrial critical power applications.

A Chase Power UPS will also work silently at all times to protect against other power quality problems common in your electricity supply such as surges, sags, brownouts, spikes, RF noise etc that occur without your knowing.

All Chase Power UPS's are supplied with software that, in the event of a long power interruption, instructs the computer to save current work and shut down in an orderly manner without the operator having to be in attendance at the time.

What level of protection does a UPS offer?

The level of protection is where various UPS technologies differ. Selection of the most appropriate technology for your application is of vital importance.

Chase Power UPS's are available in Line Interactive and Online Double Conversion technologies with expandable battery back-up times to meet any requirement.

The starting cost of a Chase Power UPS for an average workstation (ie SOHO, small individual business applications) is small. For assistance to determine what UPS you require to protect your equipment / facility consult the professional staff at Chase Power.



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