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**KEY TAKEAWAYS FROM ACTIVE SHOOTER ON CAMPUS:
A PANEL DISCUSSION**

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Security Technology

The Shocking Truth About Electrical Power

So much attention is directed at devices and systems and yet the very lifeblood flowing through them to keep them operational — steady and clean electricity — is often overlooked or taken for granted. Power protection is critical to assure protection of people, facilities and assets. Find out why and how.



by Bill Allen

November 04, 2013 | [Comments \(0\)](#) | [Post a comment](#)



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Portions of the Maui airport went black when chickens got into a power transformer and shorted it out. A rat caused a power outage in the cooling towers at the Fukushima power plant in Japan. A power outage caused by a malfunctioning switch disrupted play for more than 30 minutes during the Super Bowl. A reckless driver ran into a power pole and knocked out electricity for half a city outside of Philadelphia. Residents in Oak Lawn, Ill., sued their power company due to a surge that caused damage to thousands of electronic devices. And then there is the power havoc created by Mother Nature in the name of Sandy, Isaac, Andrew and Katrina, not to mention hundreds of tornados and thousands of damaging lightning strikes that occur every year.

The list of causes of power glitches is long and perhaps interesting to read about, but they are highly annoying for those businesses and residents that must endure them. Beyond mere annoyance, however, are the costs and potential liabilities associated with power issues — particularly where it comes to security systems.

According to Electrical Power Research Institute, an estimated \$105 billion to \$164 billion goes down the drain annually due to power interruptions, while another \$15 billion to \$24 billion is lost as a result of poor power quality such as voltage fluctuations, power surges and spikes. According to Frost & Sullivan, every year 72% of businesses in the United States are affected by power cuts that interrupt critical operations. International Data Corporation estimates that companies lose an average of \$84,000 for every hour of downtime. Of course, the raw cost and total impact varies from business to business, but no matter how you measure it or what statistics you use, power anomalies are costly to both businesses and consumers.

Liability issues also come into play during power outages or when equipment is damaged because of a surge or spike. All electrical components in a security system require power, and when power is not present, businesses, campuses and even residences become vulnerable. When a customer enters a store or someone enters a public building, the presumption is that the facility is safe and secure. There is also an assumption that the security system is performing properly. When a security system goes down, liability and safety issues are magnified, and this opens up the door for litigation against a business or campus that is not properly protected.

So let's take a closer look at the options available to the installing security integrator to ensure better system reliability, greater customer safety and satisfaction, as well as additional revenues.

Weighing Requirements Vs. Budget

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A wide variety of power protection products are available today, ranging from inexpensive surge protectors to very large three-phase uninterruptible power supplies (UPS). The most important consideration is matching up the end-user's needs and requirements with what makes sense from a budgetary standpoint.

As we all know, power is not readily available 24/7/365. Even when it is available, there are potential problems such as surges and spikes that can be devastating to electronic equipment. Despite the fact that we all know power problems do occur, there are still many businesses and consumers who don't see the importance of protecting equipment from power anomalies. And perhaps even worse, there are dealers and installers that don't include power protection for all critical components of a security system.

Those dealers and installers are doing their customers a great disservice.

Evaluating Power Protection Solutions

When it comes to protecting noncritical equipment, AC power surge protectors will suffice. Surge protectors are like anything else, in that, you get what you pay for. A six-outlet device with a Joules rating of 300 and cost of \$5 will provide very minimal protection, and it is not recommended these be used in a commercial system. Look for an AC surge protector that has more than 1,000 Joules rating; and obviously the higher the Joules rating, the better. Also, always install a surge protector that meets UL-1449 testing requirements if it is a surge strip, or UL 1363 if it is a wall-tap that plugs directly into the outlet.

POWER QUALITY DISTURBANCE COST AND FREQUENCY (SOURCE, DUKE ENERGY SURVEY)		
Disturbance	Cost/Event	Annual Frequency
Voltage sags	\$7,964	22.9
Momentary outage	\$11,027	2.4
1-hour outage: notice	\$22,973	1.1
1-hour outage: no notice	\$39,459	1.1
4-hour outage	\$74,835	1.1

Data line surge protectors are also recommended for any cameras or other peripheral devices that are connected to the network. One important consideration is that these devices should be installed at both ends of the connecting cable. When lightning or some other extraneous voltage gets on the Ethernet or coax cable, the electrical energy is dissipated across the entire length of the cable and can damage equipment at both ends. If you are protecting cameras, install a data line surge protector at the camera end, while also installing protection at the DVR. A data line surge protector is an inexpensive solution that can easily pay for itself, especially in areas where lightning strikes are common.

One other thought to ponder is that the energy from a severe lightning strike can damage equipment located more than a mile away from where the strike actually occurs. It does not need to be a direct hit from lightning to cause equipment damage.

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A UPS provides complete protection from all power problems, including battery backup, keeping security systems functioning during a power outage. A standby UPS is the most cost-effective solution and these systems are typically utilized in small capacity applications such as a four or eight-channel DVR. A line-interactive UPS incorporates automatic voltage regulation (AVR) along with battery backup capability. The AVR kicks into action when voltage drops or increases beyond a usable range without switching over to battery backup mode. Line-interactive UPSs are utilized for more mission-critical systems that require larger capacities than a standby UPS.

An on-line UPS is essentially an “electrical firewall” that takes the incoming AC signal and then converts it to DC, which eliminates any type of power anomaly. At the output, the DC signal is converted back to AC, which then supplies the attached equipment with pure, clean power. Online UPSs are generally used in highly mission-critical applications with large load capacities.

One further consideration regarding UPSs is how long the campus wants their security system to be up and running during a power

outage. Most power outages are fairly short, but there are times when outages extend from minutes into hours. Many of the higher-end UPS products have the ability to connect battery packs that can extend battery backup times well beyond the typical 10 to 15 minutes. Battery packs can be daisy-chained together, allowing for backup times to extend to two, four or even eight hours and beyond. Obviously, the more mission-critical the application, the longer the

requirement for keeping things fully functional, even during an extended power outage.

It is vitally important that the right size UPS be selected and installed. Undersizing a UPS or putting too much load on the device will cause it to be overloaded and the UPS will not function properly or provide adequate battery backup time when the need arises during a power outage. In order to determine the right size of UPS, the power supply rating (watts or amps) for each device to be connected to the UPS should be calculated.

Once the entire load is determined, the right size of UPS can be selected. A valuable tool can be found at SizeMyUPS.com, providing a wide variety of security manufacturers and equipment power listings, allowing simple system configuration. Once the full load is determined and put into the configurator, the appropriate UPS models are displayed along with various battery backup time options.

Backup Power Improves System Performance

For end users, having a comprehensive power protection and management plan will lead to more reliable operation of the security system, even when power anomalies hit hard. Studies have proven that equipment lasts longer when power protection solutions are installed. Few manufacturers cover electrical damage in their warranties such as might occur from a surge or spike. This can lead to an unhappy end user, especially if they learn it could have been prevented with some type of inexpensive power protection product. If a power outage occurs and the security system continues to do its job, the campus benefits through peace of mind, while legal liabilities also are reduced.



Including power protection solutions in every security system sale benefits all parties and should be a standard component when specifying a solution. Many resellers have adopted the strategy of not selling and installing a security system unless the customer agrees to include power protection, which not only protects the reseller, but also protects the customer. Other resellers require customers to sign a waiver if they choose not to include power protection.

That said, who can say no to improving protection for employees, students, patients, assets and facilities?

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