



Surge Protection Device Systems

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Spikes, surges, zaps and transients are all terms used to describe temporary over-voltage power line disturbances. These over-voltages can and do cause damage to our facility equipment. Some of the most common problems associated with over-voltages are:

- Unexplained circuit breaker tripping and blown fuses
- Erratic electronic equipment resets or reboots
- Scrambled and lost data
- Erratic equipment behavior
- Excessive repair and replacement costs
- Replacing lights and bulbs at unusually high rates
- Frequent downtime with loss of electronic circuit boards, modems, and hard drives
- Lightning damage

If you have experienced any of these symptoms in your facility the cause could be directly related to spikes, surges, zaps and transients. As with any recommendation, we like to quote the industry standards when speaking about power quality issues. The most common source for power quality standards is the American National Standards Institute (ANSI) and the Institute of Electrical and Electronic Engineers (IEEE). These two organizations gather information and publish standards with respect to power quality.

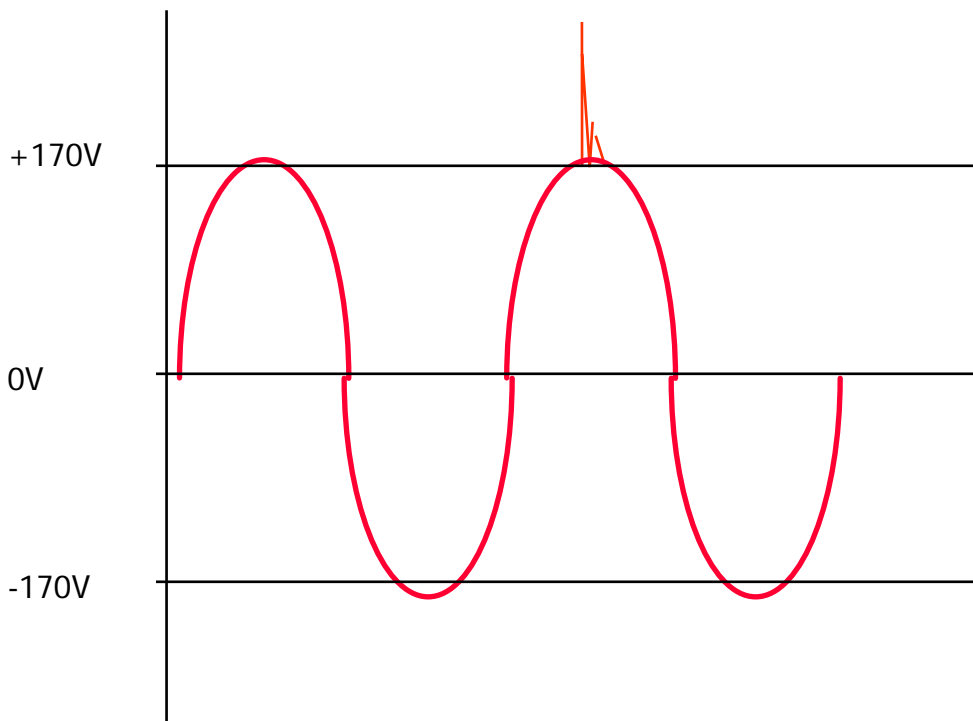
According to ANSI/IEEE C62.41, Voltage Spikes and Surges can commonly range from a few volts to well over 20,000 volts with currents in excess of 10,000 amps. These transients can and do occur as frequently as 40 to over 432,000 per hour.

Investing in a Surge Protection Device (SPD) System is not an option. **It's a necessity!**

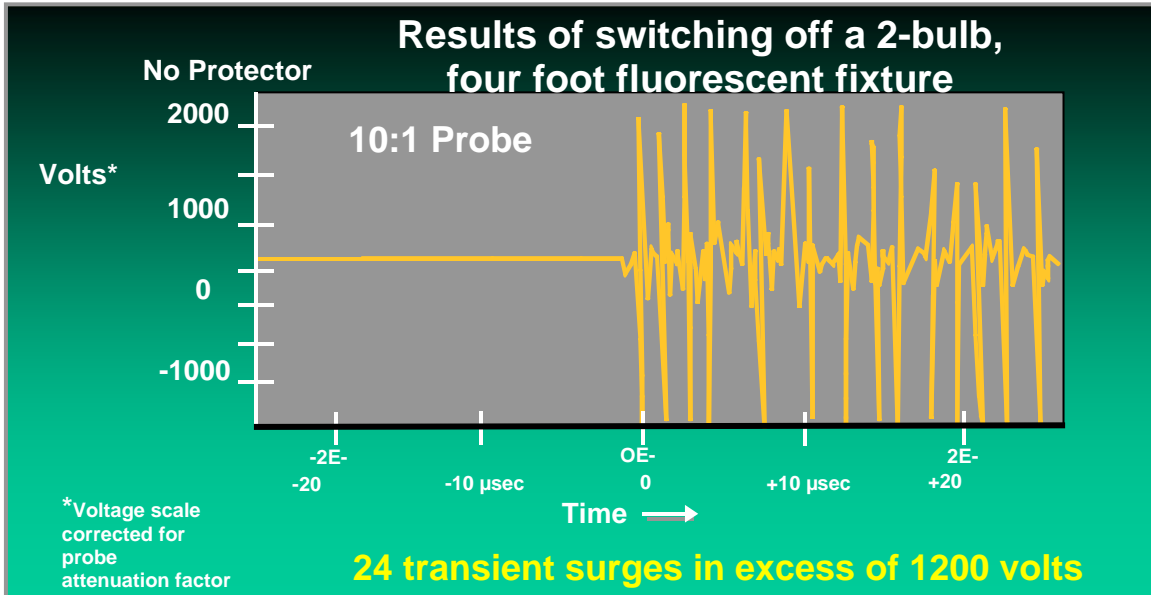


The following is an example of a transient surge:

120 Volt 60Hz AC Voltage

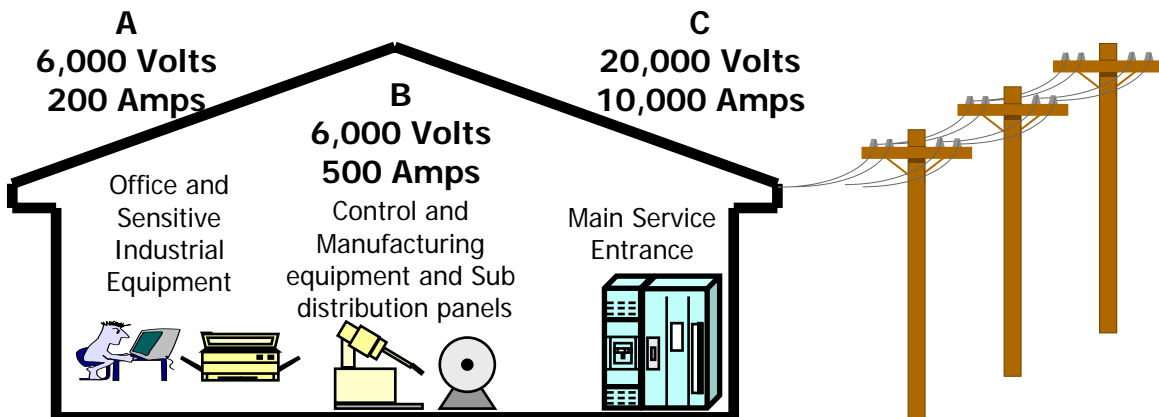


Quite often we blame the utility on these transient surges; however, many studies have shown it is equipment within our facility that causes most of the transients. General Electric performed a study that showed 80% of transient surges are caused within our facility and only 20% are caused by transient surges coming in on your electrical service from the utility. To illustrate this General Electric performed a test by looking at a standard 2 bulb four foot fluorescent light fixture common in many commercial, industrial, and home installations. By turning on and off this light only once, 24 transient surges in excess of 1200 volts were created. The following chart shows the results of this test:



Source: General Electric Instrumentation and Computer Service Laboratory

Correct selection of the appropriate Surge Protection Device (SPD) unit is critical. Once again, the best source for information concerning which SPD unit to choose comes from the ANSI/IEEE standards. ANSI/IEEE has determined location categories for the correct selection of TVSS units. The standard is called ANSI/IEEE C62.41. The following illustrates this standard:





The three categories A, B, and C determine which SPD unit should be used at which location. Many facilities have placed small category A, SPD units at critical equipment locations. (The most common is the outlet strips that have multiple plugs). Many of these outlet strips say they protect your equipment from transient surges, but if they are not UL listed as a 1449 2nd edition February 2007 Update surge suppressor, you might not have the appropriate protection needed. These outlet strips may be quality units; however, without the larger category C, SPD units at the main circuit breaker or fuse panel 20,000 volts surges may pass through your facility and destroy not only the category A, SPD unit but also any device connected to it.

If you are comparing SPD units, **check the specifications**. Many manufactures have large flashy statements that they can withstand huge transients. When comparing SPD units it is wise to use the **SAME** standards. Once again the best standard is ??????????????????????, you guessed it ANSI/IEEE.

ANSI/IEEE has developed very precise standards measuring the **PERFORMANCE** of SPD units. This standard is called ANSI/IEEE C62.41. This standard shows how each SPD unit tested worked when looking at the amount of voltage limited when a **specific** voltage and amperage was applied. When comparing SPD units one should look closely at the ANSI/IEEE C62.41 data. Make sure you get this data from your SPD manufacture and compare before buying.

Many other factors come into play when selecting the correct SPD unit for a facility, such as size, type, location, and quantity. We can provide a Surge Protection Device Survey at no charge. This survey involves a complete on-site review of your facility to determine transient surge causes and solutions.