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MAXIMUM POWER TRANSFER SOLUTION

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Stealthy Power Transients Can Do Substantial Damage

by Alex Wenger

Modern commercial and industrial environments can have an eclectic mix of devices that are powered from the AC power mains. A typical commercial working environment may have desktop computers, servers and routers, while also including elevators, chillers, air handlers and high power lighting. Industrial environments may have everything found in the commercial environment plus arc welders, induction furnaces, large mixers, extruders, etc.

The power coming into your facility may not be benign. Lightning is one of the leading causes of impulsive transients. To cause damage, lightning strikes do not need to make a direct hit on the power lines coming into a facility. Lightning currents traveling through metal structures or the ground can induce currents onto the power lines coming into your office or factory.

Powerful magnetic fields created by the very high current flowing from a lightning strike can cause considerable damage. Power company transmission system switching is another source of external impulse transients. Unless specialized monitoring and suppression equipment is in place, the first indication of trouble may be blue smoke coming from a mission critical device. Significant impulse transients can come from internal sources as well. When high power electric motors stop they produce impulse transients due to collapsing magnetic fields within the device. Industrial equipment such as induction furnaces and arc welders also produce these types of transients.

The ballasts for high intensity lighting that are suited to lighting a warehouse or a parking lot, also produce similar spikes on internal power lines. Depending on where these devices are connected in the internal power distribution network, their effects on other equipment may be more or less severe.

The MPTS has high energy transient suppressors on each of the 3 input phases to earth ground. Each phase can withstand repeated transient impulses of up to 20,000 amperes at 1,600 volts. The surge protectors are compliant with specifications UL 1449 Edition 3 in 20kA mode and ANSI/IEEE C62.41.2 Cat. A, Cat. B, & Cat. C. Any devices connected to the MPTS are protected by the action of the transient suppressors provided the earth ground connection to the MPTS has a suitably low impedance, as defined in the TransPower MPTS installation manual.