

## **Why Protect The Line Or Primary Side Of An ATS?**

Automatic Transfer Switch (ATS) surge protection is critical for the operation of the switch. The modern ATS has circuit boards, electronic controls, relays and sensors that are sensitive to transients. Transient damage to an ATS switch and/or controller can result in failure of the ATS to perform during an electrical crisis. Cumulative damage level transients can cause minor problems in the programming or logic controls for the switch resulting in the false operation of the transfer switch and operation of the generator when no problem exists, or the failure to make the transfer in the event of an actual crisis. Catastrophic damage can destroy the switch and/or controller and take the entire system off-line.

There are four main sources of potential transient damage that can impact an ATS. The first, and most common, is the utility power line. Lightning, generator switching at the utility power station or sub-station, capacitor bank switching on the grid, or nearby facilities producing their own large transients can cause catastrophic as well as cumulative level transients at the ATS. A properly installed Surge Protective Device (SPD) at the power utility line side of the ATS can prevent the damage from this source.

The second source of transients is the generator, or back-up power source line. The quality of the power produced by a back-up generator is dependent on many factors. The age of the generator and motor, the quality and frequency of the maintenance performed on the motor and generator, the load to capacity ratio of the generator, how frequently the generator is run and for how long, the quality and maintenance of the connections from the generator to the ATS, and more all have an impact on the ability of the generator to provide clean quality power to the electrical system during a power utility outage. Problems in any of these areas can result in the generator producing transients with the capability of causing everything from a minor nuisance to catastrophic failure. A properly installed SPD at the generator load side of the ATS can prevent the damage from this source.

The third source of transients is the down line electrical system. Internally generated transients can travel back up line to the ATS and cause cumulative as well as catastrophic damage to the switch and controller. A properly installed SPD at the load side line of the ATS can prevent the damage from this source.

The last source of transients is the actual physical switch within the ATS itself. The blades that switch from the power utility line input to the generator line input will cause arcing and transients when they disconnect from one and make contact with the other. A properly installed SPD at the blades of the ATS can prevent the damage from this source.

*Energy Control Systems – Fort Worth, Texas*