

SPD Basics Series Surge Suppression "101"

What is the primary purpose of a surge protective device? It is simply to reduce the transient voltage surge energy (let through voltage) to a level that is not damaging to the load equipment. In today's electrical environments that means lower let through voltages. Anything else is secondary!

The other point of basics, of significant importance, is the IEEE recommendation that we cover electrical systems three levels deep. This gives us the benefit of cascading the protection of each SPD in the system to ultimately remove the most surge energy possible before it gets to the load equipment. The end product is a transient voltage surge suppression system that results in lower let through voltages to the protected equipment. Other specifications, features and concepts should be looked at as a secondary consideration.

One of the major features that is used to try to bring focus to a secondary consideration is "Life Cycle" testing. This is where we find claims that products have been subjected to 20,000 volt / 10,000 amp surges 10,000 times, with no degradation. One recently-released paper claimed the same thing, except with 20,000 surges. One would question, why go through the exorbitant expense of doing these tests when the relevance is secondary to "lower is better" let through voltages? Perhaps the point is that the product can survive in a surge active environment. Interesting point, but let's take a look at the let through voltages at C3 for a three phase wye 120/208VAC device provided to us for testing by a concerned customer. This product (a 300kA /mode device) was tested in our lab, the resulting let through voltages were L-N 2060, L-G 1800, N-G 2490 and L-L 2350. Another product we tested by the manufacturer's own published test results were L-N 1527, L-G 1497, N-G 1467 and L-L 1993. SSI's results for a similar 3Y1 device are L-N 914, L-G 1025, N-G 1176 and L-L 1119. Looking back at the beginning of this article, what was the purpose of a Surge Protective Device? It is "lower is better" let through voltages. Our products' specifications speak for themselves.

If the products are that strong and can withstand so many surges, then why does their warranty not reflect that confidence? SSI's warranty is 25 years and it does not exclude lightning or surges that exceed the rated capacity of the device, which is common in other warranties.

In our next segment, we will address another of the industry marketing issues that keep our focus diverted from the basics.

