

Taking TVSS Technology to the Next Level

By Ellen Parson, Contributing Writer

About four years ago, Joe Arnold, president of Best Quality Power in Farmington Hills, Mich., set out to find a more practical and cost-effective way for electrical engineers to protect their clients' systems from harmonic distortion and voltage transients in a single specification. What he developed was a hybrid device within the panelboard enclosure that addressed both power quality problems. And Arnold's vision finally became a reality last November when his company unveiled the Series 519-EHGTP (patent pending) Electronic Harmonic Grade TVSS Panelboard at the Power Quality Exhibition and Conference in Chicago.

In industrial and commercial electrical design work, consulting electrical engineers typically specify circuit breaker panelboards with built-in surge suppression. In facilities with an abundance of computers or sensitive electronic equipment, they also specify a separate special type of transformer to regress the harmonic distortion produced by this equipment—possibly a phase-shifting, zig zag harmonic cancellation, or K-rated transformer. These transformers not only take up valuable space in the facility but in many cases can be quite expensive.

Arnold points out that the cost is also a factor of the increased protection such transformers can provide in certain situations. They make it possible to all but eliminate total harmonic distortion (THD) even though some facilities can continue to operate with moderate levels. "I think a number of technologies on the market today are addressing the harmonic distortion is-

sue and solving it wonderfully but very expensively," Arnold says. "They're reducing harmonic distortion down to a negligible level, but that's not necessarily what most people need."

Of course, that's only if they know they have a problem. If you ask the maintenance staff of most commercial and industrial buildings if they're having power quality problems—specifically associated with harmonic distortion—the vast majority will say no. But considering the high level of electronic sophistication available in those settings now, Arnold says THD is there whether they know how to look for it or not. "If you start talking about some kind of solution to a problem that they don't perceive they have, even if it totally eliminates harmonic distortion, it's not going to fly," Arnold says. "What we did was come up with something we felt would offer what people really need and that's a technology that would ensure as they add more nonlinear loads to a building, harmonic distortion won't get out of hand."

Arnold says this is the industry's first, cost-effective electrical distribution panelboard to reduce current and voltage THD and to suppress damaging voltage surges/transients. The company states that in documented lab tests with single- and 3-phase nonlinear loads, the device reduced total harmonic current distortion by more than 50%. It should be noted, though, that that level of reduction is acceptable depending on the application, the site itself, and the population of nonlinear loads at that site. In addition, the panelboard includes

a sine wave phase angle tracking TVSS module capable of suppressing IEEE Category A3 ring waves with nearly identical results—regardless of the phase angle.

By giving electrical engineers an answer to design and coordination issues associated with configuring consistent performance solutions to address harmonic distortion, voltage transient, and noise concerns, Arnold expects the 519-EHGTP to have an immediate and significant impact on the new construction industry. "Part of what I've learned over the years is that when it comes to power quality concerns, most people—whether they are engineers or consumers—typically go as far as wanting to make sure their equipment works reliably," he says. "They're not looking for perfect power; they're just looking for power that makes everything work smoothly."

For more information, visit www.bestqualitypower.com.



Product Features

- 200% rated neutral
- 10 kA AIC fault rating
- Main breaker and lugs rating: 400A maximum
- Voltages: 120/240VAC, single-phase, 3-wire + ground; 120/208VAC, 3-phase, 4-wire + ground; or 277/480VAC, 3-phase, 4-wire + ground
- Peak surge current: 40A, 80A, 120A, 160A, or 200A per phase
- Operating temperature: -40°C to +140°C
- EM/RFI attenuation up to 34 dB (normal mode)
- TVSS fault contact 0.5A at 120VAC