

Characterizing Power Quality Mitigation Equipment & Devices

Characterization & Simulation of Mitigation Equipment & Devices is “Proof in the Pudding” Every Time!

Proper measurement and identification of power quality (PQ) problems, has given the sales industry a perfect opportunity to sell a “gadget” that will “cure all PQ problems”. The average customer, even electrical engineers who manage facilities, can be conned into thinking their PQ problems can be solved with a \$49.95 PQ “gadget”.

There are 1,000’s of PQ “gadgets” on the market ready for someone to buy and install. The problem is—less than half of them really work! A “mom and pop” PQ shop who can monitor your PQ, probably for free, is ready to sell you a solution. They’ll just add in a fee for doing the monitoring, and not tell you about it. Our 30-

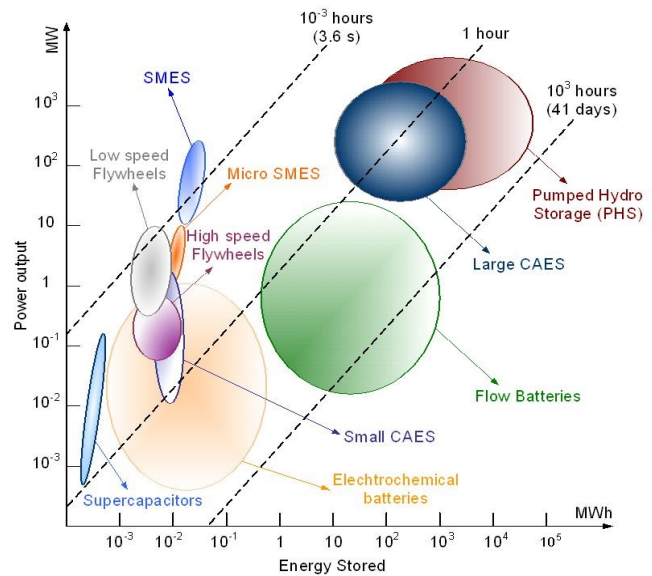
year tenure in power systems and PQ consulting includes, performance testing of PQ mitigation equipment, and devices ranging from, devices you can hold in your hand, to equipment used in data centers.

For single- and three-phase devices, and equipment rated less than 10 kW with a utilization voltage of 600 volts or less, testing is carried out in our Advanced PQ Laboratory in Knoxville, Tennessee. For larger equipment, testing is carried out in our larger PQ laboratory.

Our expert PQ modeling and simulation engineers have in-depth experience in modeling and simulating mitigation equipment. Our library of utility and customer pow-

er systems combined with real-world PQ problems and disturbances provides a “proving ground” for characterizing equipment and devices before they are installed in the field

for field demonstration tests. If your mitigation technology has a problem, Electrotek will find it—and, in most cases, we’ll show you how to fix and improve it.



End Users Want to Know—“Do These Things Really Work?”

Many mitigation devices are available for installation in front of an AC electronic product. Mitigation at the point-of-interface, versus the point-of-common-coupling, can be very expensive to implement. End users are leery of purchasing devices that claim to reduce energy, elim-

inate transients, and other disturbances. They’re concerns are valid, given many disturbances can apply a lot of energy to a device. To many hits of certain disturbances will cause a temperature increase. “How much heat can a device tolerate before it smokes or catches

on fire?” There’s no way to determine this in the real-world without an advanced PQ immunity test to inject disturbances, and measure responses. Electrotek test engineers are masters at designing test protocols, and test stations to do just that. Moreover, our multi-

TB digital library of real-world disturbances provides that value-added engineering expertise needed. Our system selects disturbances based on the device’s specifications and determines how well the device can survive disturbances in the real world.

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Electrotek's Power Quality Engineering Services Center is a world-renowned center for power systems and power quality engineering. Our Center includes an Advanced Power Quality Testing & Research Laboratory.

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Benefits of Characterizing PQ Mitigation Equipment and Devices

End use customers and product manufacturers are concerned about approving equipment and devices for PQ mitigation. Characterizing equipment and devices beforehand has benefits:

- End users and manufacturers need to know the real-world limitations of any mitigation equipment and device before approving its use in any application.
- Non-linear characteristics of the grid and loads to be protected can change the performance of any equipment or device, regardless of what the specifications state.
- "Rubber-meets-the-road" tests to determine true field performance should be done by qualified PQ expert engineers in controlled laboratory environments where performance can be documented in detail.
- Generating a document describing real-world PQ mitigation testing in a qualified PQ laboratory can serve many purposes including helping to sell the mitigation equipment and device and demonstrating to legal authorities (prior to purchase) that the equipment or device is real and performs according to the needs of the end user and manufacturer who's looking for protection for their end-use product experiencing PQ-related failures in customer facilities.
- It's always easier to say "I'm thankful rigorously testing the mitigation equipment before we launched it into the marketplace."

About Electrotek

Founded in 1984, Electrotek Concepts, Inc. is world renowned for its research, developmental, applications, and problem-solving work in understanding, identifying, analyzing, and preventing power quality (PQ) problems. Our expertise extends from the utility generators, to the electrical/electronic load inside a customers' facility. The experience of Electrotek's team of PQ engineers extends from experts in utility power systems, participants on IEEE and IEC standards boards regarding PQ standards, to designers of end-use electronic equipment. Our engineers are armed to address any PQ problem at any level. The future of reliable, available power, and customer equipment in today's modern technological society depends on compatibility between utility power, the customer's facility electrical system, and the end-use equipment customers depend on to carry out their day-to-day business activities.

