# Electrotek's Digital Power Quality Disturbance Library

## World's First Versatile Digital Power Quality Disturbance Library

Electrotek Concepts was the first to launch remote PQ monitoring via the telephone network in 1996, and also the first to utilize the Internet to control a PQ monitor and download data from a monitor. These accomplishments changed the way PQ monitoring would be done.

Remote monitoring at 1,000's of sites allowed us to develop the world's first and largest digital PQ disturbance library. The library is managed by our PQ Monitoring System, and our trained PQ Monitoring Engineers overlooking our Power Quality Monitoring Centers in Knoxville, TN and Beverly, MA.

As developers of the PQView software, we're able manage and manipulate our PQView PQ databases any way that we need to. Often, certain entities have a need for some of our disturbance waveforms for further studies or testing. If a manufacturer has the capability of injecting PQ disturbance waveforms into their product under test (PUT), they may want to purchase one of our Disturbance Waveforms Sets. Our engineers can design a Set to include any type of disturbances regarding type, severity, voltage class, geographical location, load, or PQ problem, etc.

Disturbances can be identified by the following PQ parameters:

- Disturbance type
- Disturbance date/time
- Voltage at location monitored
- Geographic location (US and international)

- Single–, two– or three-phase disturbance
- Severity of disturbance (e.g., all disturbances with Vthd > 2%)
- Others

Disturbance data can be reproduced using any graphical format (e.g., .png, .jpg, etc.) and any numerical format (e.g., Microsoft Excel CSV).

Each disturbance is given a name and identification number. Disturbances can be delivered in one-cycle format, or formats up to 10-cycles for repetitive disturbances. Below is a disturbance characterized by voltage notching, distortion and transients. The map below shows the locations where PQ data has been collected.
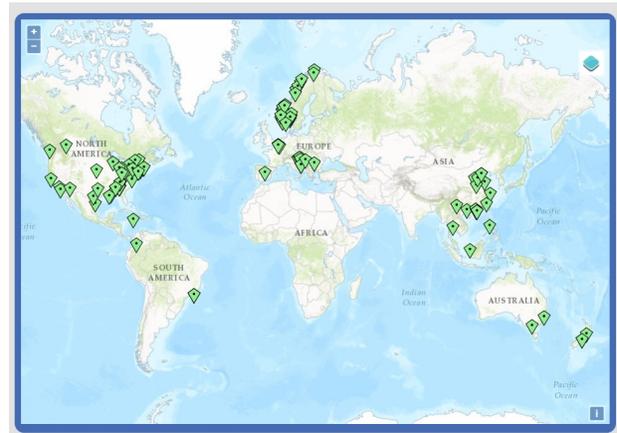


## Uses of Electrotek's PQView Power Quality Disturbance Library

There are many applications for real-world PQ disturbance data from our library. Listed below are some application examples:

- Disturbance re-generation testing of electronic loads
- Building disturbance files for modeling & simulation exercises when study PQ impacts of utility & end user systems
- Understand the types of disturbances that can occur in different geographical areas, different dates/time, etc.
- Development of training to each interested party about real PQ disturbances that occur in the field
- Building a smaller library of test disturbances when characterizing a PQ monitor for its monitoring performance.

Electrotek is constantly adding thousands of disturbances to its library daily. Our library is backed up on servers at two different locations to ensure storage redundancy. Disturbances include both voltage and current waveforms with good sampling rates.

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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.

Learn about our Center by visiting: www.pqengineering.com

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## Benefits of Using Real-World PQ Disturbance Data from Electrotek

Parties interested in learning about real-world PQ and how actual disturbance can impact electrical and electronic equipment can benefit from:

- Developing an insight as to what real-world PQ disturbances occur in a specific geographical area, utility voltage, date/time as well as with many electrical conditions and loads.

- Learning about the different wave shapes associated with disturbances like sags, swells, transients, over-voltage, under-voltages, distortion, etc.

- How often does a specific PQ condition like voltage distortion above 2% occur on the grid as well as in customer facilities.

- Learning how voltage sources and loads respond to changes (i.e., disturbance) in line voltage occur, when faults occur and when loads change state.

- Studying complex disturbances including how often do they occur, how are disturbances likely to be mixed together to form a complex disturbance, which disturbance usually dominates in a complex disturbance.

- Understanding how customer electrical systems respond to different types of disturbances (one-off events and streams of events) when powering specific types of loads. This can be done through modeling and simulations.

## 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.

PQView®