



Utility Company Keeps Quality Power Flowing to its Customers



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One of the nation's largest utilities is located in Arizona. It operates or participates in 11 major power plants and numerous other generating stations, including thermal, nuclear, natural gas and hydroelectric sources.

As more and more customers come on line, the utility has shown a consistent commitment to providing its customers better reliability and power quality. With a power quality program that has been in place for years, it continues to employ the latest technology in this area.

Power reliability and power quality are special concerns among industrial manufacturers as electrical supply disruption can cost a plant millions of dollars due to lost production time and equipment damage. Of course, power reliability means more than just a steady supply of electricity, it also means ensuring a high level of power quality, free of sags, swells, harmonics or transients that can damage equipment or cause it to fail prematurely.

Monitoring Project Makes Power Quality a Priority

About 10 years ago, the utility began working with Schneider Electric on purchasing and installing power quality monitors all around its vast system. It started with ION Enterprise panel-mounted 7700s. Now, it's created a system capable of comprehensive monitoring, with approximately 85 ION monitors of various models functioning as power quality monitors at its numerous substations, including some in substations dedicated to large industrial customers.

With a significant industrial and manufacturing market in the utility's service area, power quality became a bigger concern, especially to those industrial customers who are sensitive to voltage sags. One such industry involves companies in the area that fabricate microelectronics, which includes a very sensitive process such that when they have a voltage sag they can easily lose two or three million dollars by a single fluctuation of the lights. So, when these companies build a new factory and it costs upwards a billion dollars, they don't leave any stone unturned.

Power quality monitors serve as a data collection system that watches for voltage sag events that may impact customers. Determining the location of power quality monitors for the establishment of voltage sag indices was critical, balancing the cost of additional monitors versus the amount of coverage that a given monitor location can provide.



On the utility's electric system, the 12kV distribution bus is the optimal location for monitoring, as it is more efficient than monitoring each feeder independently, but still provides the necessary detail to measure and assess voltage sag events. It then uses the data to identify and repair conditions within its network that have a negative impact on power quality, improving its service levels to key customers and raising its customer satisfaction levels.

Internally, numerous operational, engineering and customer service groups use the data collected for fault analysis, troubleshooting and customer notification. It's also used for power quality performance metrics and reporting, establishing system-wide power quality indices, and an Annual Reliability Report that is produced.

Once the monitors were installed, there were even some unexpected benefits that emerged after using them for awhile.

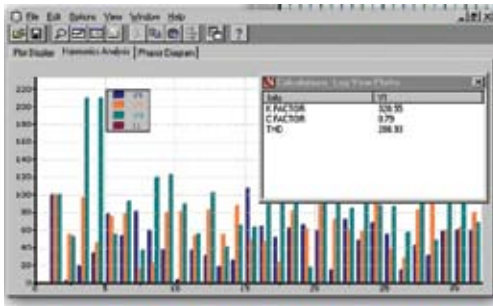
The ION monitors have a waveform resolution set up at 128 or 256 samples per waveform, which makes them the only devices on the system with this level of resolution. Even its state-of-the-art relays, with significantly higher costs, don't offer this level of sampling – immensely helpful when troubleshooting system issues.

Other Initiatives in the Works

A major professional sports venue and large retail center was recently built in the utility's service area, which is fed by a single substation made up of two substation transformers and nine feeders. This is another application in which ION8600 monitors were put in place to be used as a power quality monitor and also a revenue meter.

In addition, the utility is installing monitors on its 230kV networks to gauge the performance and for troubleshooting and on shunt-connected capacitors (69kv and 230kV) to monitor switching transients. More recently, it recognized a need to monitor for voltage flicker, specifically to see how much it was impacting the system. Fortunately, Schneider Electric has a monitor in its product portfolio capable of meeting this requirement that is both very accurate and state-of-the-art.

Using a variety of PowerLogic ION monitors in multiple applications keeps this large utility on the cutting edge of power quality monitoring, and ensures clean, reliable power for its large base of customers.



Schneider Electric - North American Operating Division
295 Tech Park Drive
LaVergne, TN 37086
Tel: 866-466-7627 Toll Free
PowerLogic.com



by Schneider Electric

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