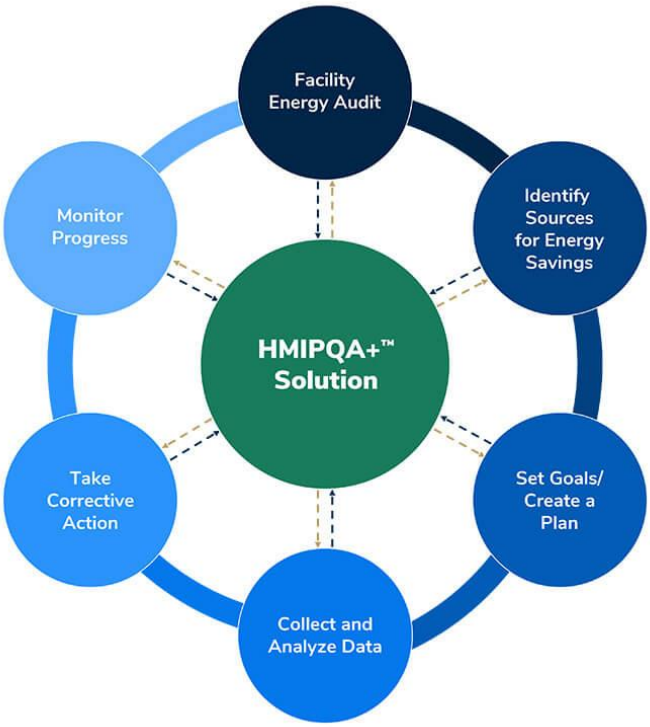
HMIPQA+ SCADA Solution

Technology Campus Case Study



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The HMIPQA+™ solution is an HMI SCADA application that is fully customizable to specific customer requirements. This case study looks at a project in which the HMIPQA+™ solution was implemented for a technology company that is ranked within the top 100 of the Fortune 500 companies. Their specific HMIPQA+™ solution was developed for use in one of the company's technology campuses, with multiple future installations being planned throughout North America.

The HMIPQA+™ solution is part of Electro Industries/GaugeTech's energy management software. It offers a next generation SCADA solution that is easily scalable to fit specific application requirements, with highly customizable and intuitive graphical displays of both energy metering and other commodity data. It can integrate data from EIG's power and energy meters and third party devices.

Multi-Vendor Device Support and Open Protocol Support

In the initial technology campus project, the following devices were installed:

- 16 Nexus® 1500+ power quality meters installed on the mains and used to measure power quality for each of the substations.
- 45 MP200™ multi-circuit metering systems, used to collect readings from 360 individual circuits.
- 20 Shark® 250 cyber secure power and energy meters.
- 26 SEL 751 feeder protection relays.

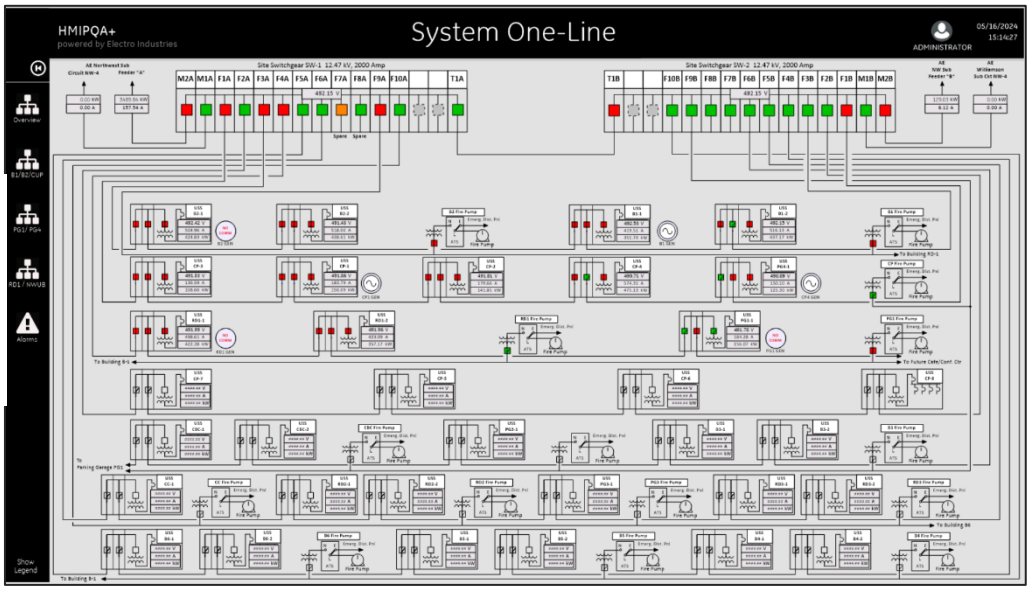
In addition to the Schweitzer SEL-751 relays, the HMIPQA+™ solution is integrated with the Cummins diesel generators and ASCO automatic transfer switches (ATS) that are part of the campus electrical system.

Example Installation

Supports Adherence to Industry Standards, Such as LEEDS and ASHRAE

The devices are installed in seven campus buildings, including electrical substations, parking garages and laboratories. The metering devices are used to aggregate individual meter readings into several different load groups, e.g., HVAC, lighting, and plug loads, per the ASHRAE/IES 90.1 Standard, which delineates the minimum requirements for energy efficient building design. The company also uses the load data to plan for additional campus buildings at this and other locations. They use the information they receive to project the size and amount of equipment they will need in their new electrical systems.

The System's One-line Diagram (Example)



Open Platform for Integration with Third Party Systems

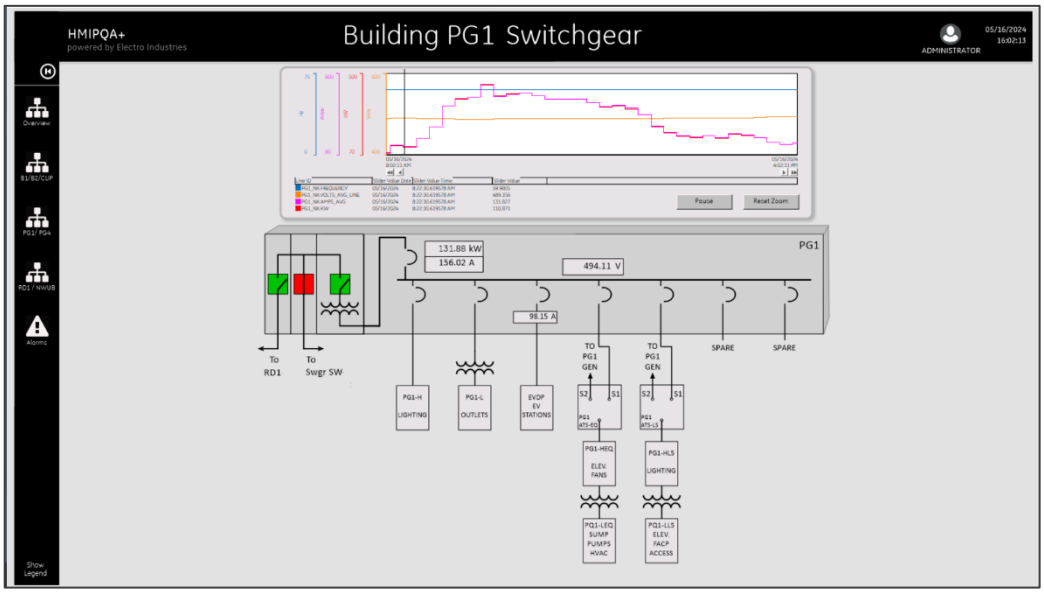
The HMIPQA+™ solution currently provides monitoring capabilities for all seven campus buildings. Information can be accessed via dashboards from any location on the company's network, both on and off campus. HMIPQA+ also communicates data from the EIG meters to the campus's Johnson Controls building management system (BMS) via open platform communications united architecture (OPC-UA protocol).

Real Time Data and Power Quality Analysis

The customized dashboards provide real time usage and device status for the metering and other devices, aggregated load data, trending in each of the substations on campus, and alarms based on programmed limit conditions.

Refer to the following example screens.

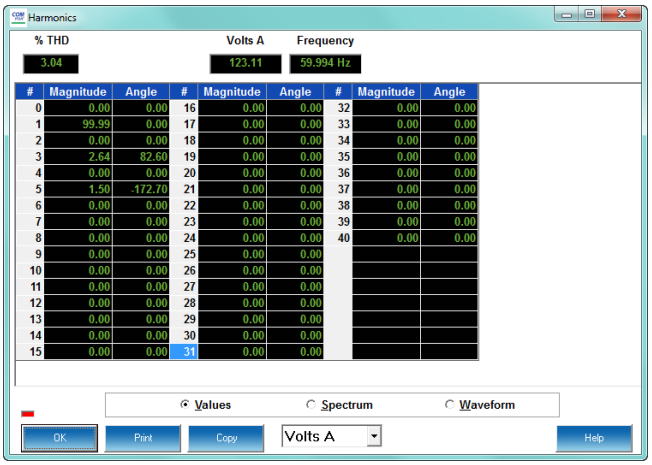
Switchgear Diagram for One of the Parking Garages



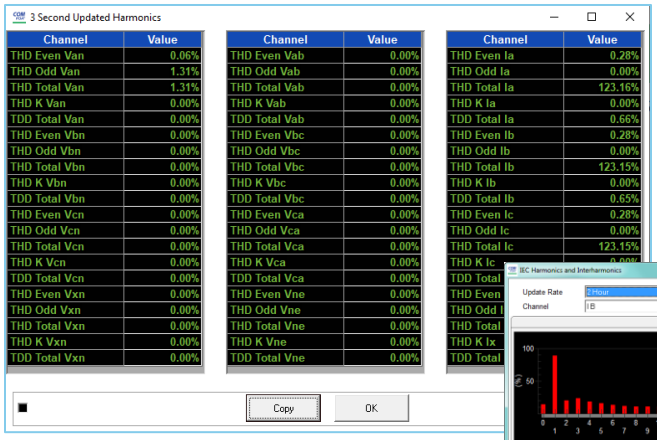
Real Time Electrical Usage Dashboards for Installed Power and Energy Meters

Real Time Power Quality, Power Quality Logs and Waveform Analysis

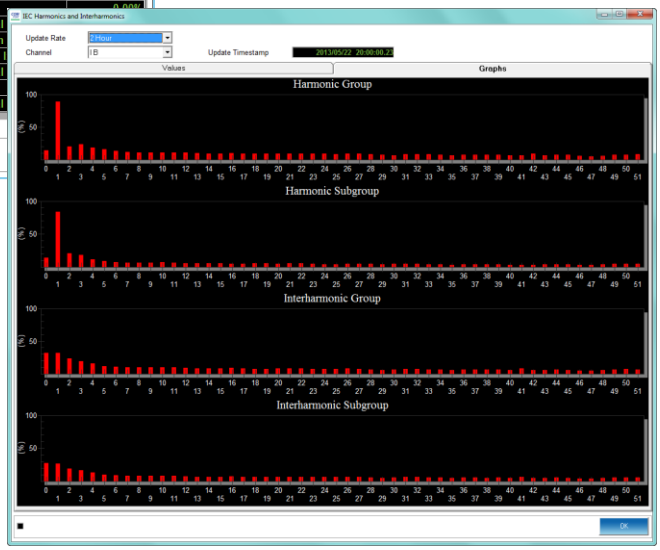
Power Quality information and analysis is available through a direct link from HMIPQA+ to the CommunicatorPQA® energy management application. The user can view real time power quality metrics, such as harmonics and THD, in the application's polling screens.



Real Time Harmonics polling

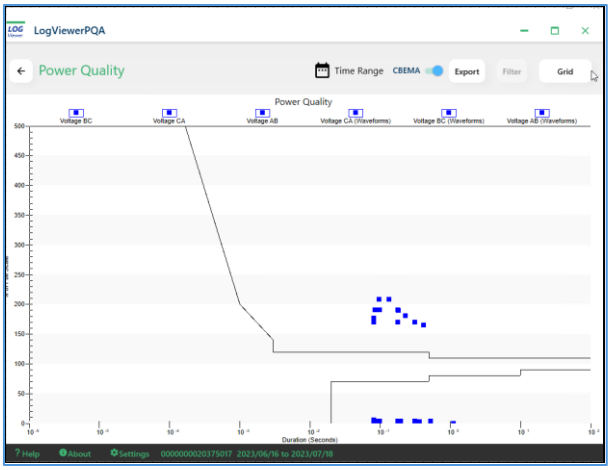


3 Second Updated Harmonics polling

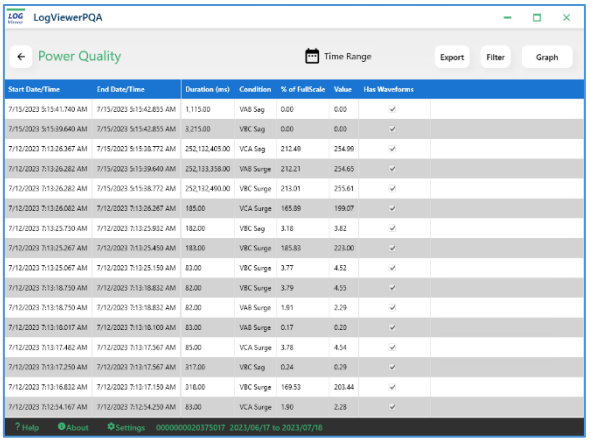


IEC Harmonics and Interharmonics polling

The application can also store power quality events recorded by EIG meters, into multiple logs. The power quality data can be viewed in a table and in CBEMA/SEMI F47 charts using the application's LogViewerPQA.

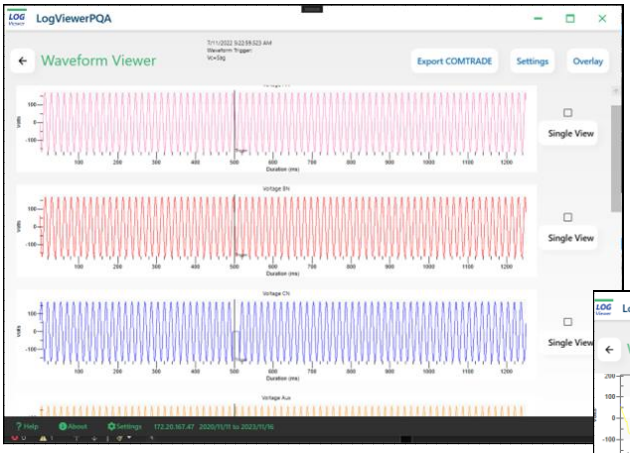


LogViewerPQA's CBEMA Chart

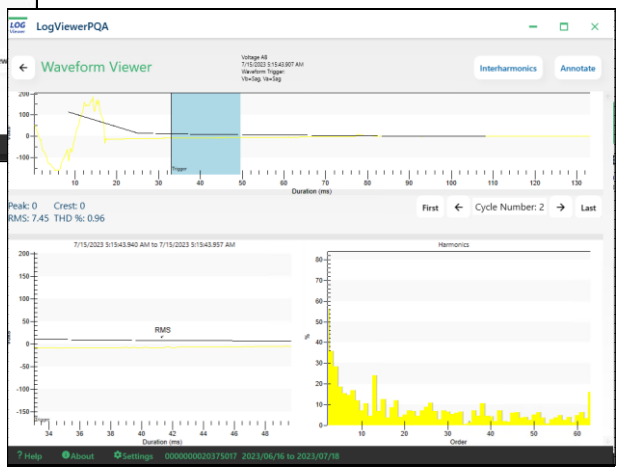


LogViewerPQA's Power Quality Log Table

The Waveform log contains recorded waveforms of power quality events that can be viewed and analyzed in detail.



LogViewerPQA's Waveform Viewer



Detailed Waveform information, including RMS Readings and Harmonics/Interharmonics

Additionally, positive and negative transients can be viewed in the waveforms recorded by the Nexus® 1500+ power quality meter that supports 50 MHz transient capture.

Additional Benefits of the HMIPQA+™ SCADA Solution

The HMIPQA+™ solution is beneficial not just for data centers such as the one we have been discussing, but for multiple commercial and industrial environments. Benefits include:

- **Improved efficiency**
    - By identifying inefficiencies and areas of wasted energy, an HMIPQA+ system can help businesses and data centers reduce their energy consumption and lower their electric bills.
- **Reduced environmental impact**
    - HMIPQA+ can help businesses reduce their carbon footprint by highlighting areas where energy can be improved.
- **Proactive problem solving**
    - HMIPQA+ software can analyze data trends to predict future issues, allowing businesses to address problems before they become more serious.
- **Better equipment maintenance**
    - HMIPQA+ can help businesses identify areas where equipment may need maintenance.
- **Enhanced sustainability**
    - HMIPQA+ can help businesses comply with environmental, social, and governance (ESG) guidelines.
- **Improved disaster prevention**
    - HMIPQA+ can help businesses avoid costly downtime by providing information about electrical health issues before they can shut down operations.
- **More accurate energy data**
    - HMIPQA+ can provide real-time data and historical trends, allowing businesses to see how much energy they are using.
- **Improved capacity management**
    - HMIPQA+ can help businesses understand their available capacity and capacity limits and allocate power usage more effectively.

The Future

For our current data center project, the technology campus will be adding six additional buildings, soon. Sixty meters and 283 metered circuits will be added to the HMIPQA+™ solution once these buildings are operational.

In Conclusion

The HMIPQA+™ solution has been a terrific asset for the technology campus data center because its customized dashboards have provided visibility into the entire system, including third party devices. Through its link to the CommunicatorPQA® application, the system has also allowed access to detailed power quality information and analytics. To learn more about this next generation SCADA solution and how it can help your business, click the following link:

To schedule a demo of the HMIPQA+ SCADA solution, click the following link:

https://www.electroind.com/products/hmipqa-power-monitoring-scada/